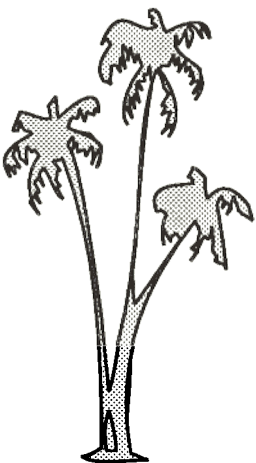


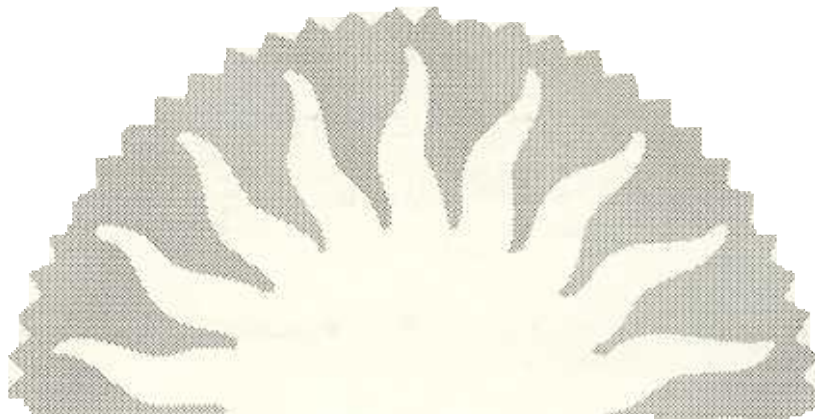
Landscape and Irrigation Guidelines

*September 1989
Revised March 1993*



*Department of City Planning and Building
City of San Jose*

Landscape and Irrigation Guidelines



Prepared by
Department of City Planning
September 1989

Adopted by
the City Council
October 10, 1989
Revised March 1993

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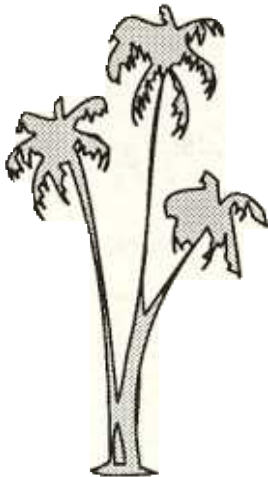
Introduction

Landscape

and

Irrigation

Guidelines



The City of San Jose is located at the easterly side of the Santa Clara Valley. The climate in San Jose is of a typical Mediterranean type characterized by hot, very dry summers, and cool, relatively rainy winters. Normal rainfall averages fourteen inches per year, though can be much lower during periodic droughts. Native plants and trees are adapted to this climate, absorbing water from rainfall, stream, and groundwater sources.

San Jose's water is supplied from local wells and reservoirs and imported from outside sources. Much of this water goes to landscape irrigation, and high technology industries that require a constant source of quality water for manufacturing. During times of drought, imported water supplies may be reduced or curtailed resulting in greater use of groundwater supplies. Overdrawing groundwater supplies would increase land settling, salt water intrusion, and reduced water quality.

These Guidelines recognize that the water supply from all sources is finite and there is therefore the need to conserve water in wet years so that adequate resources are available during the inevitable dry years.

Unlike the areas' native plants, exotic planting requires a large amount of irrigation water to survive and grow. In an effort to conserve landscape irrigation water, the Landscape and Irrigation Design Guidelines were prepared. The purpose of the Guidelines is to assist the private sector and their consultants in the design and management of landscape plans and irrigation systems which are sensitive to local environmental and design conditions and which conserve water during times of normal rainfall and drought.

These Guidelines are intended to help implement the Water Efficiency Ordinance in conformance with the provisions of AB324 and apply Citywide. They are compatible with *Landscape and Irrigation Guidelines for the North San Jose/Alviso Area (September 1988)* and can be used in place thereof.

Objectives

The Guidelines are based on the following objectives:

- Reduce irrigation water consumption with no decline in landscape quality.

Provide guidelines that are applicable to the types of projects and design problems encountered in the City of San Jose.

- Maintain the high quality standards established by adopted design guidelines for residential, commercial and industrial development.
- Provide sufficient but flexible direction for private project developers and their design consultants for the preparation of landscape and irrigation plans, in accordance with the City's Water Efficiency Ordinance and for the City officials who will review these plans.

Applicability

The Guidelines apply to all new and rehabilitated development projects that require a development permit in the City of San Jose, and to rehabilitated landscaping on existing development. Developer-installed front-yard and common area landscaping in single-family projects will be subject to the Guidelines. As applied to landscaping, a rehabilitated project includes installation of new plants into existing landscape area, or the increase of existing landscape area.

Organization

The Landscape and Irrigation Guidelines are divided into five main parts. Each part is further subdivided into smaller more specific sections and subsections.

Part Landscape Materials and Design

This section of the Guidelines discusses the parts of landscaping that are typical for the many development types found in the San Jose area. Subsections cover Planting Materials, Landscape Design Parameters, Water Features, and Soil Preparation.

Part II — Specific Project Guidelines

This section discusses landscape design parameters for specific project types: Low Density Residential, High Density Residential, Hillside Residential, and Commercial and Industrial projects.

Part III — Irrigation System Design

This section discusses the design of irrigation systems that maintain project landscaping in a physically healthy, and visually attractive condition without wasting water.

Part IV — Landscape and Irrigation Plans

This section discusses the required level of detail and information required on landscape and irrigation plans.

Part V — Irrigation System Operation and Landscape Maintenance

This section discusses landscape maintenance and irrigation system operation to maintain project landscaping in a physically healthy, and visually attractive condition without wasting water.

Part I — Landscape Materials and Design

This section discusses the parts of landscaping that are typical for the many development types found in the San Jose area. These common items are intended to be used in combination with Section II, Specific Project Guidelines, and are not exclusive.

The choices that determine how much irrigation water will be required are made during the basic layout of the project site. Correct plant selection must consider site and environmental conditions as well as the functional goals of the landscape program. Planting programs in San Jose must be designed to use irrigation water efficiently. However, new landscape plans must equal or exceed surrounding landscaping in terms of visual quality.

An effective and pragmatic approach to plant selection and landscape design involves identifying through site analysis, and then classifying the project site into planting zones. The number and type of planting zones

will vary according to the size, type, and complexity of the project. Planting zones are determined by the following criteria:

- **Site Characteristics:** Including but not limited to regional, macro, and micro climatic conditions; soils (including textural types, structural conditions, and chemical and nutrient analysis); drainage characteristics; water quality and availability; and public street visibility.
- **Environmental Conditions:** Including but not limited to solar exposure (morning or afternoon sun, shade, part-shade, and seasonal changes) and intensity; temperature range (minimum and maximum and duration); soil temperatures; moisture range (available soil moisture in winter and summer); air moisture (fog and humidity affect plant tolerance to temperature extremes and disease susceptibility); wind conditions (salt-laden near ocean, dryness, seasonal patterns, and strength); and water quality (availability, irrigation suitability, salinity, and chemical constituents).
- **Soil Conditions:** Including but not limited to soil type — clay, loam, gravelly, sandy, or serpentine; pH (acid or alkaline); salinity; drainage (including hardpan and textural layering); nutrient deficiencies or toxicities; and soil contaminants.
- **Plant Characteristics:** Including but not limited to the plant's water requirements; tolerance of high water tables, competition, compacted soils, heat and drought, salinity, soil and wind, cold and moisture; resistance and susceptibility to insects and disease; fire resistance; erosion control; and form, structure, and texture.
- **Project Characteristics:** Including but not limited to project type; public street visibility; established design patterns of adjacent and/or nearby development; and activity, use, and focus areas.

Plants are then chosen and grouped according to these zones, with correspondingly different watering levels allocated to them. Grouping plant materials into these areas allows irrigation systems to be divided into separately controlled watering zones, each custom designed and operated to efficiently meet specific watering needs.

1.0 Plant Materials General Guidelines

Landscaping shall emphasize water conserving plant materials. New landscaping shall equal or exceed surrounding landscaping in terms of

visual quality, emphasizing varieties of material type, texture, and color.

- 1.1 Planting Zones:** The project site should be classified into planting zones. Planting materials should then be chosen and grouped according to these zones. Dissimilar planting zones may overlap each other where the respective planting zones have similar watering requirements, or where planting zones of differing watering requirements can be efficiently irrigated.

Turf Varieties: Turf varieties should be limited to moderate water-using varieties, such as Tall Fescue Hybrids (*Festuca Arundinacea* "Alta", "Falcon", "Revel", and "Jaguar"), or Hard Fescue Hybrids (*Festuca Durer* "Scaldis", "Reliant", and "Turnament") rather than bluegrass or ryegrass varieties.

Plant Lists: New landscaping should use water conserving plant materials that are native to, or are adapted to a hot dry summer/cool wet winter climate. Non-native/adapted varieties that require large amounts of irrigation water to survive the hot dry summer season are to be avoided.

A general listing of native and adapted plant species are listed in *Water Conserving Plants & Landscapes for the Bay Area*, published by the East Bay Municipal Utility District. A specific listing of designated drought tolerant California native plants are listed in *A Landscaping Guide to Native and Naturalized Plants for Santa Clara County*, published by the Santa Clara Valley Water District. Summary lists of these publications are provided in the Appendix B and Appendix C, respectively, as a convenient reference. An additional source is the *Sunset Western Garden Book*, published by Lane Magazine and Book Company.

The plant species listed in the first two of these publications are appropriate for the majority of project types and areas in San Jose. They are also the more commonly used water-conserving plants in the Bay Area. These lists are not exclusive, however. Other water conserving plants can be proposed and may be permitted by the Director of Planning if he is satisfied that those plants are water conserving species.

Non-Adapted Plants: The Director of Planning may permit the very limited use of tree, shrub, and groundcover species not adapted to a hot dry summer climate if it can be demonstrated that:

- The plant species and landscape changes to provide for the plant species does not have a deleterious effect upon the visual quality and impact of the project; and
- One or more of the following conditions is met:
 - a) The non-native/adapted plant is irrigated by runoff water from other landscape areas;
 - b) Turf area is reduced to compensate for the increased irrigation water required for the plant species when established; or
 - c) The plant is located within a micro-climate area of the project that maintains plant health and appearance with minimal irrigation water.

2.0 Landscape Design Parameters General Guidelines

These design guidelines cover the areas of landscape design that bear upon irrigation water needs. The Director of Planning may waive or reduce a standard for a part of a landscape plan where it can be demonstrated that water saving design features elsewhere in the project design will compensate for the relaxation of the standard and that the landscape plan as a whole meets water conservation objectives.

Tree Planting: Trees should be planted to shade turf, groundcover, and shrub planting areas, thereby reducing water evaporation from these areas.

Trees and Turf: Two approaches are possible:

- It is preferred that turf be separated from new trees to prevent over-watering of the tree, surface rooting, crown-rot, and "girdling" of the tree trunk by maintenance equipment.

The minimum separation should be from three to five feet. If the tree is located within a turf area, this separation should be five feet in diameter. Groundcover and/or shrubs may be planted within this area, or

- If trees are to be planted in a turf area, the following criteria should be met:
 - a) Only deep-rooted tree species should be used.
 - b) Turf area should be graded so that turf irrigation water drains away from the tree.
 - c) Turf irrigation should be directed away from the tree. The tree should be irrigated by a combined bubbler/deep waterpipe fixture.

Curb Separations: All landscape areas should be separated from asphalt pavement by a poured-in-place concrete curb or curb-and-gutter to prevent water leakage to the pavement area.

Turf Coverage: See Section 5.2 for Low Density residential, Section 6.2 for Hillside Residential, Section 7.1 for High Density Residential, and Section 8.4 for Commercial and Industrial projects.

Perimeter to Area Ratio: Turf areas should maintain a maximum perimeter to area ratio of 40 percent. The perimeter-to-area ratio is computed by dividing the length of the turf area perimeter by the turf area. The ratio is computed for each turf area on the project.

A small perimeter-to-area ratio reflects a turf area which can be efficiently irrigated with minimum water loss to runoff. A large perimeter-to-area ratio reflects the narrow turf areas, typically found between sidewalk and curb, or located at the end of parking rows.

Turf Dimension: The minimum dimension of any turf area should be determined by the minimum "throw" of the sprinkler head to be used for that area and in no case may be less than

ten feet. Landscape areas with dimensions of less than ten feet should be planted with non-turf materials.

Narrow Planting Areas: Planting materials for narrow landscape strips, traffic median islands, and sloped areas should consist of water conserving groundcovers, shrubs, and trees.

Turf Separation: Groundcover, shrub, and tree planting areas should be located between turf areas and buildings. Turf areas and other planting areas should be separated by a header.

Existing Trees: Existing large trees (exceeding 18 inches in diameter, measured two (2) feet above natural grade) should be incorporated into the project's landscape plan. Care must be exercised during and after construction not to damage the trees or alter the soil make-up within the dripline. The following activities should not be allowed within the dripline area of the existing tree:

- Trenching, grade cutting, filling, or soil compaction. Boring or hand digging may, in place of trenching, limit damage to tree roots if a pipe or electrical line must be installed under the tree's drip line. In all cases, a licensed Landscape Architect or Arborist should be consulted for recommendations and those recommendations incorporated into the project's landscape program.
- Landscaping with plant materials which require spray irrigation. A carefully designed and controlled deep watering program may be permitted if designed by a licensed Landscape Architect or Arborist.
- Paving for public/private streets and driveways and sidewalks.
- Newly constructed barriers (concrete foundations, swimming pools, garden walls, etc.) that can act as dams that trap water. Grading should be designed so that all irrigation water drains away from the perimeter drip line.

2.10 Landscape Protection: Buildings, fencing, walls, arbors, trees, and slopes should be used to screen planting areas from wind and sun.

Plant Groups: Plants shall be used in a group context (as opposed to individual units) according to their water requirements, to avoid the need to over water some in order to accommodate others.

- 2.12 Slope Planting:** In general, low-growing shrubs and groundcover should be substituted for lawn on slopes to retard runoff and increase on-site water retention.

Drainage: All landscape areas should drain away from building, parking, public street, and hillside areas.

Turf Drainage: Turf areas should drain away from trees and shrubs except where runoff water is used to irrigate a non-native/adapted plant species.

Turf Grades: Turf areas should not exceed a 10% (one-in-ten) slope. This standard may be relaxed where perimeter berms are to be used to screen project parking, or other undesirable project areas, from view of the public right-of-way.

Where turf is to be used on slopes greater than ten percent, three square feet of turf will be subtracted from the total turf area allowed the project for each square foot of turf located above the ten percent slope line.

Non-Turf Grades: All other landscape areas should not exceed a 33% (one-in-three) slope.

Model Homes: Landscaping at model homes shall demonstrate water-conserving landscape plants, irrigation systems, and the effective use of turf. Signs shall identify the model as an example of a home utilizing water efficient landscaping. Developers are required to provide buyers with information about designing, installing, and maintaining water efficient landscapes.

3.0 Water Features General Guidelines

Water features lose water to evaporation, bottom seepage, plumbing leakage, and "wind-carry" for spray and mist-type fountains. Evaporation from still water can equal the evapotranspiration from turf area. There are two types of water features:

- Decorative Water Features typically include reflective pools and ponds, spray and mist-type fountains. They function only as a visual feature, and are typically single water users in that they do not reuse or capture other irrigation water or storm water runoff, nor is their wastewater reused for other project operations.
- Functional Water Features provide a visual amenity or recreational feature which are integral to a required or desired project operation. Examples include: swimming pools or other recreational amenities for residential projects; water falls and "puddling" type fountains to create "white noise"; holding ponds for HVAC (Heating, Ventilation, and Air Conditioning) equipment water.

Spray and mist-type fountains are prohibited. Functional water features may be allowed, provided that the water feature is integral to a required or desired project function and/or operation.

3.1 Water Sources: Except for swimming pools and spas, only recirculating or reclaimed water may be used to clean, fill, or maintain levels in decorative and functional ponds, pools, streams, and fountains.

3.2 Linings: All water features will have impermeable linings.

3.3 Design Standard/Decorative Water Feature:

- For purely decorative water features, 0.5 square foot of turf will be subtracted from the project's turf area allowance for each square foot of water area.

Design Standard/Functional Water Feature: For functional water features, the maximum allowed turf area will not be reduced.

- 3.5 Surface Evaporation:** To reduce water loss to evaporation, swimming pools and spas located outdoors should be covered when not used.

4.0 Soil Preparation

Soil should drain well and be able to retain moisture and nutrients in the root zone. Soil which has too much sand or clay content does not have a good ability to provide water to plants. If the soil is too sandy a soil amendment can add the organic material needed to help hold the water in the soil. If the soil has too much clay an amendment can help break up the soil so that water drains through more easily.

- 4.1 Soil Tests:** Site specific soil tests should be performed as part of the design preparation process. The soils report should include recommendations for amending and preparing the soil for planting. The soils test should also establish the soil's absorption rate.

Soil Amendment: Soils should be amended to improve filtration, water retention, and structure. A two to three inch thick layer of bulky amendment should be applied and incorporated into the soil (1/4 to 1/3 of the upper six to nine inches of soil should be amendment). Amendment should consist of compost, peat moss, rice hulls, leaf mold, nitrogen stabilized sawdust, ground bark, etc. Composted manure should be avoided as amendment due to its high salt content.

Soil Polymers: Soil polymers should be added to all soils for shrubs and trees.

Part II — Specific Project Guidelines

Development in San Jose occurs in such a diverse variety of project type and setting that a single set of design standards cannot adequately address all of it. For those characteristics related to development type, Section II

provides additional guidance to be used in combination with the items listed in Section I.

Guidelines for low density residential flat-land and hillside projects are advisory — that is the property owner or developer is encouraged, but not required, to follow them. Where a project overlaps more than one specific project category (e.g., a high density residential development to be located on a hillside site), the more restrictive design standard will apply.

5.0 Low Density Residential

Landscaping and irrigation systems installed by property owners on individual single family residence, duplex, and triplex lots are exempt from the Guidelines. Developer-installed front-yard and common area landscaping in single-family projects will, however, be subject to the guidelines. The following advisory guidelines are provided for the individual property owner or project developer to use for the preparation of landscape plans and irrigation systems. Projects on slopes greater than seven percent should refer to Section 7.0

5.1 Plan and Design: Divide the yard into low — for shrubs and trees, and high — for turf, watering zones. The typical 6,000 to 8,000 square foot property will require only three watering zones. Large-lot and hillside residential properties may require more. Watering, or planting zones, include:

- **High water use area:** Turf grass areas for active use, entertainment, and/or maximum visual impact areas. High water use zones are best suited for small scale applications with distinct, maintainable edges.
- **Low water use area:** Plants require low or no irrigation water. Examples include turf perimeters planted with trees and shrubs, and informal buffer plantings such as hedges and wind-rows. Low water use areas include native and adapted water conserving tree, shrub, and groundcover plants.

5.2 Turf Coverage: Turf area should not exceed 1,000 square feet, or 25% of the landscape area whichever is greater.

Turf Location: Turf areas should be used primarily for recreation and entertainment areas rather than for aesthetics. Avoid using turf on steep slopes, next to buildings or fences, and alongside narrow walkways. Irrigation will be much more efficient, and the turf, buildings and fences will be easier and more economical to maintain.

6.0 High-Density Residential

Any residential project of four or more attached dwelling units falls within this category. A larger percentage of the landscape area may be turf to meet the needs for passive and active recreation.

Turf Area: No more than 500 square feet per dwelling unit, not to exceed 35% of the total landscape area.

Turf Perimeter: Not to exceed ten lineal feet per dwelling unit.

Turf Location: Turf areas should be consolidated in the passive and active recreation areas of the project, typically in the centers of dwelling unit clusters.

Bermed Planting Areas: Bermed planting areas should be designed in the following manner:

- Turf should be placed only on the portion of the berm facing the public right-of-way.
- The berm area facing the interior, towards the building and parking areas of the project site, should be planted with groundcover materials or be backed by a retaining wall.
- Trees should be installed at the "toe" of the berm slope rather than on the berm "crown". On the front side, trees should be installed in curb-side tree wells or larger planting areas. Street trees and project trees should be planted in a staggered pattern to maximize shade for pedestrian sidewalk and project berm areas.

Windbreaks: For high density residential projects located in the North San Jose area, trees should be planted along the north side of the project site to form windbreaks to reduce evaporation. These tree types must be adapted to the afternoon winds of the North San Jose area.

7.0 Hillside Residential

The natural beauty of the foothills provides a distinctiveness to the San Jose area. These standards are to ensure a sophisticated and harmonious landscape program for hillside projects. Private landscaping should mirror and complement existing features in plant materials and topography in order to blend with the natural environment. Irrigation systems should be designed so that all irrigation water stays on site.

Property having an average slope greater than seven percent is considered a hillside parcel. This section is mandatory for residential development having four or more attached dwelling units. Low density residential development, as described in Section 5.0, is exempt from these standards.

Plan and Design: Generally, hillside landscaping plans should be divided into three zones:

- Garden Zone which allows domestic irrigated planting of the type specified in these Guidelines.
- Transition Zone which allows non-native plant materials that are compatible with the natural setting and require minimal watering.

Native Vegetation Zone which either preserves existing native vegetation (including hillside grass areas) or reintroduces native plants on graded slopes so that the presence of hillside vegetation and forms are maintained. Selective thinning of native vegetation would be allowed to reduce fire hazards. This Zone should be located on the project side of the project boundary line where adjacent to property designated Non-Urban Hillside, Public Park and Open Space, or Private Open Space by the City's General Plan,

City and County Park property, and stream, creek, and river areas.

Of the distance between building and property line, at least 30% should be devoted to the Native Vegetation Zone and no more than 30% should be devoted to the Garden Zone.

- 7.2 Turf Coverage:** Turf area should not exceed 1,000 square feet, or 10% of the landscape area whichever is greater. Turf areas should be located within the Garden Zone.

Plant Materials: Plant materials listed in *Water Conserving Plants & Landscapes for the Bay Area*, published by the East Bay Municipal Utility District (EBMUD) (see Appendix B) should be limited only to the Garden Zone. Non-adapted plant materials may be located in this zone using the criteria in Section 1.4. Plant materials for the Transition Zone should emphasize the species listed in *A Landscaping Guide to Native and Naturalized Plants for Santa Clara County*, published by the Santa Clara Valley Water District (see Appendix C). Plant species specified in the EBMUD publication are allowed if used as described under Section 7.7.

Non-adapted plant species are not allowed in the Native Vegetation Zone.

Graded Slopes: Landscape grading should minimize the "engineered" look of new slopes. New slopes should reflect and reinforce the overall visual character of the site, and be consistent with the characteristics of surrounding hillsides.

Vegetation Pockets: Vegetation pockets should be used to enhance the character of graded slopes and create a more natural appearance.

Natural Drainage: Natural drainage swales should be preserved where possible. Irrigation water should be controlled through design so that no runoff occurs from the project site to adjoining natural areas.

Transition Areas: Slope plantings should create a gradual transition from developed slope areas into natural areas.

By extending fingers of planting into existing and sculptured slopes, the new landscape should blend in with the natural vegetation.

Transition areas should have a natural look in some places and a more manicured appearance in others. Transition area plantings should be introduced as often as needed to prevent the appearance of a distinct line where newly introduced landscape abuts native landscape or one landscape zone is next to another.

8.0 Commercial, Industrial, and Other Non—Residential Projects

This section applies to all the varied types of non-residential projects. These standards are not exclusive, rather they are intended to work with and compliment the landscape standards of the City's "Commercial Design Guidelines", "Industrial Design Guidelines" and design policies for other types of development.

Windbreaks: For projects located in the North San Jose area, trees should be planted along the north side of the project site to form windbreaks to reduce evaporation. These tree types must be adapted to the afternoon winds of North San Jose.

Bermed Planting Areas: Bermed planting areas should be designed in the following manner:

- Turf should be placed only on the portion of the berm facing the public right-of-way.
- The berm area facing the interior, towards the building and parking areas of the project site, should be planted with groundcover materials or be backed by a retaining wall.
- Trees should be installed at the "toe" of berm slopes rather than on the berm "crown". On the front side, trees should be installed in curb-side tree wells or larger planting areas. Street trees and project trees should be planted in a staggered pattern to maximize shade for pedestrian sidewalk and project berm areas.

8.3 Parking Areas: Trees to be located in parking areas should be installed in a landscaped planting well in order to provide adequate oxygen and water to the root zone, and to prevent "heat-burn" to the tree canopy from the parking area. Planting wells should be achieved by one of the following methods:

- A continuous net five foot wide landscape strip, located between rows of parking spaces, or
- Tree wells, seven feet square net, resulting from the conversion of two opposing full sized parking spaces to compact spaces.

Turf Coverage: Turf coverage should not exceed 25% of the total project landscape area. A higher percentage of turf may be allowed for playing and athletic fields or other areas designed for active recreation.

Turf Location: Turf areas should be consolidated at the areas of greatest visual emphasis i.e. perimeter street frontages and/or at the focal points of projects.

Berm Slopes: Berms should not exceed a 25% (one-in-four) slope.

Part III Irrigation System Design

Traditionally, spray heads have been the most common irrigation emitters used in the San Jose area. Spray head systems can irrigate large landscape areas with a relative small amount of equipment. They are, however, very inefficient for shrub and tree areas since they encourage shallow root systems that require frequent watering and they do not confine water output to areas which actually need irrigation. For shrubs and trees, a bubbler and/or drip irrigation system is better, resulting in deep rooted plants requiring less water as they mature.

Water conserving plant species can survive with little or no water other than available rainfall. However, most water conserving plants need water initially in order to become established. In addition, some water conserving plants need occasional watering — infrequent, but deep soakings to encourage a deep root system.

9.0 Irrigation Systems

Irrigation systems shall deliver the minimum volume of water required by a given planting scheme to remain healthy and visually attractive.

9.1 General Design Standards:

- All irrigation systems shall be designed, maintained, and managed to meet or exceed 0.625 efficiency. (*See Appendix A*)
- All irrigation equipment should be screened appropriately from view from public areas.
- All flat area systems should be buried below grade with "pop-up" type sprinkler heads where applicable (i.e. turf areas or groundcover areas). "Pop-up" sprinklers should have at least a six inch to twelve inch pop-up height above turf and groundcover materials. "Pop-up" sprinklers located along curbs should have a maximum pop-up height of six inches.
- Irrigation should be programmed to meet the needs of the specific plant types to keep planting areas in top-moist condition. Typically, the system design should encourage deep watering where shorter, more frequent applications are necessary to avoid run-off.
- Moisture sensing devices should be located in all turf areas, and at the high and low point of bermed turf areas, in order to control irrigation cycles according to specific irrigation requirements.
- Low-volume sprinkler heads should be limited to turf and groundcover areas. Shrub and tree areas should be exclusively irrigated by drip and/or bubbler systems. Small or narrow groundcover areas should be flood irrigated by a bubbler system.

No irrigation system should be installed near existing established oak trees. Native oaks do not require, and can be harmed by, regular watering cycles.

- The irrigation design plan shall accurately and clearly identify:
 - a) Location and size of separate water meters for the landscape.
 - b) Location, type, and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, and backflow prevention devices.
 - c) Static water pressure at the point of connection to the public water supply.
 - d) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (psi) for each station.
 - e) Reclaimed water irrigation systems as specified in Section 15.10.480 of the Water Efficiency Ordinance.
- Reclaimed water irrigation systems are required for all landscaped areas in excess of 10,000 square feet, except in the case where lack of future availability of reclaimed water warrants an exemption from the Director of Planning.

9.2 Irrigation Valves:

- Remote control valves should be installed in groundcover shrub beds below grade in approved valve box enclosures. Valves should be of a "slow-opening" type to avoid water hammer and possible damage to piping and fittings. Manual control valves are not appropriate.
- Gate valves should be installed in a sectionalized pattern to allow shutting down various sections of the system independently without affecting the entire system.
- Pressure relief valves should be installed at mainline piping "dead-ends" and "right angle turns" to prevent possible water-hammer damage to pipe and fittings.

- Anti-drain valves should be installed in strategic points in lateral lines to minimize or prevent back-drainage and subsequent erosion from "low" elevation sprinkler heads.

Pressure regulating valves may be necessary for high pressure zones to reduce the operating pressure and avoid possible failure of pipe and fittings.

Piping:

- All piping should be PVC buried to a depth of 18" (lateral piping) or 24" (mainline piping).
- Piping which crosses public/private streets and driveways should be encased in a sleeve located 24" below the top of paved surfaces.

Spray Heads:

- Only low-volume spray heads with matched precipitation rates should be used. The application rate should not exceed 0.75 inches per hour.
- The application rate for all emitters should be based on the soils rate of absorption, and in no case should be greater than 0.25 inches per cycle.
- Sprinkler heads should be of fixed spray, impact, or rotor type and should be selected for proper area coverage, low precipitation rate, operating pressure, adjustment capability, and ease of maintenance. Irrigation heads and emitters should have matched precipitation rates within each control valve circuit.
- Space spray heads evenly, with their "throw" radius generously overlapped. Overlap for turf areas should be 100%, for groundcover areas 75%. Head placement and installation should avoid overspray onto adjacent properties, structures, or paved areas.
- Spray irrigation systems are not allowed in landscaped areas less than ten feet wide.

- Drip emitters or bubblers are the most efficient means of watering shrubs. In no case should spray heads be used to irrigate shrubs and trees. To establish deep roots, trees should be irrigated with bubbler heads and deep watering pipes.
- Pressure compensating heads should be used on turf and groundcover areas to reduce "wind-drift."
- Precipitation rates for sprinkler heads should match the soil's absorption rate.

9.5 Irrigation Controllers:

- Irrigation should be controlled by an automatic controller having multiple programming capabilities.
- Each irrigation valve should service only landscape materials of similar short-term and long-term watering needs as well as similar plant types, activity areas, wind exposure, sun exposure, focus areas, and micro-climates created within the project.

Anti-drain valves should be installed just upstream of low sprinkler heads to prevent line drainage and erosions.

- Areas of separate maintenance responsibility should be controlled by separate meters, mainline, valves, and controllers.
- Pressure regulators should be installed in accordance with local requirements where pressure is excessive.
- To prevent spray heads from misting and puddling, each pressure compensating circuit valve should have individual flow and pressure controls. Spray heads should be fitted with pressure compensating nozzles.
- All irrigation systems must have rain sensing override devices installed in them.

Irrigation Schedule:

Irrigation Schedules required for Landscape Documentation Packages should use evapotranspiration data to calculate the following information:

- An annual irrigation program, with seasonal irrigation schedules for the plant establishment period, established landscape, and any temporarily irrigated areas.
- Run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station.
- Amount of applied water (specified in applicable billing units) recommended on a monthly and annual basis.

Part IV Landscape and Irrigation Plans

Except for single-family homes, all landscaping and landscape area irrigation systems should be designed under the direction of, and certified by a Landscape Architect. The design and review of the irrigation plan should proceed concurrently with that of the project grading plan and landscape plan.

10.0 Landscape Plans and Conceptual Irrigation Plans

Landscape planting and conceptual irrigation system design plans are required with development permits issued by the Planning Department. Both plans must be scaled and dimensioned accurately, and show the following information:

All property lines and street names.

Location of existing and proposed buildings.

Location of all existing and proposed walks, driveways, fences, pools, ponds, water features, and retaining walls.

Location of all utility lines.

All existing plant materials, labeled to remain or to be removed.

Location of all planting zones, showing the location, type, and size of all existing and proposed plants, including turf.

Calculations showing turf area, water area, shrub and tree area, area for annuals, and the area of turf slopes steeper than ten percent.

- 10.8** Quantity, size, and type of plant materials to be installed.
- 10.9** Location of irrigation zones for turf areas, shrubs and trees, annuals, and turfed areas on slopes exceeding 10%.
- 10.10** Typical example details of spray, groundcover, shrub, and tree irrigation installations.
- 10.11** Standards for class of irrigation pipe, depth of pipe and backflow preventers.

11.0 Final Landscape and Irrigation Plans

Final landscape planting and irrigation system design plans will be required prior to issuance of building permits. Both plans are required to be scaled and dimensioned accurately and include the information specified under sections 10.1 through 10.9 as well as the following additional information:

An irrigation plan showing the following information:

- Location, type, size and depth of all irrigation components, including the water meter(s).
- Static water pressure at the point of connection.
- Total gallons per minute and precipitation rates for each control valve circuit.
- Required operating pressure for each valve circuit.
- Starting time(s) of the irrigation schedule.

The type and quantity of soil amendment and mulch to be added to project soils.

Part V — Irrigation System Operation and Landscape Maintenance

Poor irrigation operation and landscape maintenance wastes valuable water. As much as 30 to 40% of the typical project's irrigation water can be lost as runoff or excessive evaporation from the planting areas. In addition to wasting water, excess runoff damages parking and driveway surfaces, and undermines building foundations and paving areas.

12.0 Irrigation System Operation

Irrigation systems shall be carefully and competently maintained to ensure adequate watering of landscaped areas. All irrigation water should remain within the landscape area. Irrigation system operation should include the following:

Watering Audits: Watering audits should be periodically performed by a qualified California state trained auditor to evaluate irrigation efficiency.

Watering Hours: Watering of landscaping shall occur only between the hours of 10:00 P.M. and 5:00 A.M.

System Inspection: Check sprinkler systems regularly for leakage, worn and damaged heads, poor coverage, and overspray. Adjust or replace hardware, as necessary, to maintain the design efficiency of the system. Replace hardware with matched equipment.

Overspray: Irrigation systems may not overspray or run off onto paved or street areas.

Wind-Carry: Irrigation system operation should be modified on windy days to off-set wind-created distortion.

Adjustments: Amount of flow should be reduced after plant materials have become established (generally one year after planting) and should be adjusted each season to account for cooler temperatures as well as natural irrigation provided by rainfall.

13.0 Landscape Maintenance

Landscaped areas shall be carefully and competently maintained to ensure adequate water absorption and retention. Landscape maintenance should include the following:

Turf Areas: For turf areas, examine soil, depth of rooting, and water penetration by using a sampling tube — a device that removes soil cores for close examination. If moisture depth exceeds six to eight inches for turf, water more frequently for shorter periods. If moisture depth falls short, then increase the watering period.

Turf Management: Turf areas should be managed in the following manner:

- **Dethatch Turf Areas** — Periodically, comb thatch from turf area with a vertical mower.
- **Aerate Turf Areas** — Periodically, aerate turf to relieve soil compaction and to promote deep healthy roots. The most effective technique is to remove 1/2 inch diameter soil cores with a hollow-tined mechanical aerator.
- **Mowing Turf Areas** — Mowing should remove no more than half the blade length at any one time. Mower height should be measured from a hard level surface to the top of the bedknife on a reel mower and to the bottom of the blade of a rotary. Mow cool season grasses to a minimum height of from two to three inches above grade.
- **Fertilizers** — Apply fertilizer adequately but do not over-fertilize. Plant materials are less able to tolerate dry conditions when over-fertilized.

- 13.3 Mulch:** Mulch landscape areas regularly to reduce evaporation, moderate soil temperatures, and discourage weeds. Vertical mulch trees and shrubs by drilling one-inch-diameter holes at the dripline to improve water penetration.

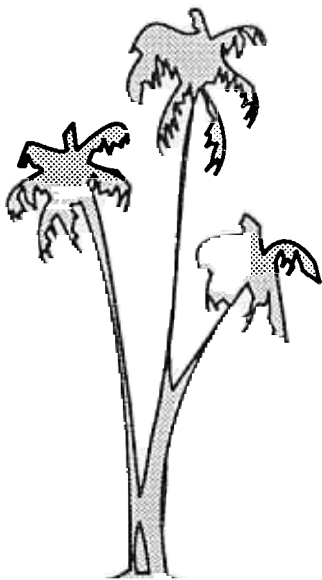
Visqueen, sheet plastic, and other non-porous material should not be placed under the mulch.

Weeding: Weed regularly in all landscape areas.

Pruning: Prune as necessary in all non-turf landscape areas.

Irrigation Equipment: Check, adjust and repair all irrigation equipment as necessary, including resetting automatic controllers.

*Landscape
and
Irrigation
Guidelines*



Appendix

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Appendix A

Definitions

BERMED TURF AREA — Berms are turf covered embankments, somewhat dike-like in appearance, commonly used by landscape architects to hide parking areas or building foundations from view. Berms are difficult to irrigate efficiently. Because of steep slopes — typically 50% — and low absorption soils — typically heavy clay — most irrigation water will runoff the berm onto paving areas after a short time.

CROWN OF SLOPE — The top-most, somewhat convex curved portion, of an embankment.

DRAINAGE SWALES — A drainage swale is a constructed or natural drainage channel which has a turf surface. A gutter is nothing more than a paved swale. Swales are commonly used to intercept, direct, and control storm or irrigation water runoff.

EVAPOTRANSPIRATION — Irrigation requirements are determined by the evapotranspiration (ET) of the landscape area. ET is measured in inches or millimeters of water is the amount of water that evaporates from the soils, plus the amount that transpires through the leaves or blade stems of a specific plant. ET is contingent upon the variables affecting the plant group — plant species, air temperature, sun and wind exposure, soil type, and thatch. ET figures vary from place to place within a project site, and from day to day, season to season, and year to year.

Watering by ET is adequate for turf area. However, it does not supply enough water for deeply rooted shrubs and trees. Watering for trees and shrubs should be determined separately.

HILLSIDE PROPERTY — Property with an average slope gradient greater than seven percent, which may include territory with slopes of less than seven percent. A seven percent slope has seven units of vertical elevation per one-hundred units of horizontal distance, measured on a line perpendicular to contours of equal elevation.

6.0 IRRIGATION EQUIPMENT — There are four types of irrigation equipment: spray heads for turf and groundcover areas, drip and bubbler systems for shrub and tree areas, and subterranean systems for difficult irrigation applications. By far spray heads are the most often used emitters in the San Jose area. Spray head systems can irrigate large landscape areas with a relative small amount of equipment. They are, however, inefficient for shrub and tree areas.

Basic Spray Nozzle (Turf) — The throw radii of spray nozzles range six to fifteen feet. Some models have adjustable patterns to suit irregular shaped landscape areas. They apply water fast — often from 1.5 to 2.25 inches per hour. This is too fast for most soils of the San Jose area to absorb.

- **Multi-Stream Gear Rotor (Turf and Groundcover)** — Multi-stream gear rotors apply water at 0.33 to 0.75 inches per hour, which is slow enough for even heavy Clay soils to absorb without runoff. These emitters are often the most water conserving and cost efficient for lawn areas in the 400 to 1,000 square foot range. The throw radii range from 16 to 40 feet. Some models are adjustable.

Single-Stream Gear Rotor (Turf) — Single-stream gear rotors are the most versatile for emitters medium to large lawn areas. Application rates range from 0.1 to 0.5 inches per hour. At the lowest watering level, runoff is rare, even for heavy clay soils. The throw radii range from 18 to 50 feet. Both the watering pattern and throw radius are adjustable.

- **Impact Sprinklers (Turf)** — Impact sprinklers perform much like single-stream rotors. They are larger, and make the familiar "slapping" sound each time the swinging arm hits the stream of water. The throw radius is usually adjustable. Water distribution is uneven, being heaviest near the sprinkler head.
- **Drip Emitters (Shrubs and Trees)** — Drip systems apply water at low rates to specific points close to grade, reducing water losses to evaporation, runoff, imprecise dosage, and wind-carry. Application rates are determined by the valve setting and the watering time.

Drip Systems are ideally suited to establish deeply rooted shrubs and trees. Installation costs for both labor and material are higher compared to systems relying only on spray heads.

- **Bubbler Systems (Trees and Groundcover)** — Bubblers are used with "deep water" pipes to establish deeply rooted trees. The word "bubbler" describes the method of application. Water bubbles from the emitter to the tree base, then into the water pipe. Roots are drawn to this "deep" water source. Application rates are determined by the valve setting and the watering time.

Bubbler systems can be used to irrigate small or narrow groundcover planting areas. Here the bubbler "floods" the planting area with water. Application rates are determined by the valve setting and the watering time.

LOW-VOLUME SPRAY HEADS Spray heads emitting less than 0.75 inches per hour.

PERMEABILITY — Permeability pertains to the ease with which irrigation water can flow through the soil and irrigate root zones, and is one of the factors that affects the choice of plant materials and irrigation system design. All soils are a combination of sand, clay, and decomposed organic material. High permeable soils have a much higher proportion of sand to other material. Water absorption is high, runoff is quite low. Low permeable soils have a higher amount of clay to other material. Water absorption is low, runoff is quite high. San Jose soils is predominantly clay type.

PLANTING ZONES — Heavier irrigation is most valuable in the most visible and intensely used parts of the project site. Areas with similar levels of visibility and activity should be identified and grouped together. Thayer and Richman call these areas hydrozones or planting zones. There are three basic hydrozone classifications — larger, complicated projects may require more. These classifications include the Principle Hydrozone for turf and annuals and non-adapted plant materials, the Minimal Hydrozone for groundcover, and the Elemental Hydrozone for native and adapted plant species and water conserving trees and shrubs.

The concept behind planting zones, or hydrozones, is that watering levels may be very high at the foci of the project site, but irrigation water for the entire project will be low due to the concentration of high water use zones to those restricted areas. Plants should be chosen and grouped to fit the zone — e.g. plants with a high water requirement in the first hydrozone, water conserving plants in the lowest hydrozone. Grouping plant materials into these areas allows irrigation systems to be divided into separately controlled watering zones, each custom designed and operated to efficiently meet specific watering needs.

THATCH — Thatch is a layer of decomposed organic matter, located at the base of turf which develops from clippings and decayed blades, stems, and roots. Excessive thatch will prevent water and fertilizer from entering the soil and may stop oxygen exchange in the root zone, resulting in shallow roots and weak turf. Periodically, comb thatch from turf area with a vertical mower.

TOE OF SLOPE — The bottom-most part, typically a convex curve, where an embankment meets flat grade.

WATER CONSERVING PLANTS — A water conserving plant can survive with little or no water other than available rainfall. Most water conserving plants need water initially in order to become established. In addition, some water conserving plants need occasional watering — infrequent, but deep soakings to encourage a deep root system.

Water conserving plants are able to cope with scarce water by a variety of adaptations. Some plant species survive dry conditions with deep, large root systems which tap water stored deep in the soil. Such plants require infrequent, deep watering to fulfill their water needs. In time, with the development of a deep root system, these plants may need no supplemental water. Some plant species have small leaves which reduce water loss from evaporation. Other plant species are able to store water during dry periods.

Appendix B

Summary of *Water Conserving Plants & Landscapes for the Bay Area*,
published by the East Bay Municipal Utility District.

Latin name	Common name
TREES	
Acacia baileyana	Bailey acacia
A. cultriformis	Knife acacia
A. cyanophylla	Blue leaf wattle
A. cyclopis	NCN ¹
A. decora	Graceful wattle
A. decurrens	Green wattle
A. decurrens dealbata	Silver wattle
A. farnensia	Sweet acacia
A. greggi	Catclaw acacia
A. longifolia	Sidney golden wattle
A. melanoxylon	Blackwood acacia
A. pendula	Weeping myall
A. podalyriifolia	Pearl acacia
A. pycnantha	Golden wattle
A. redolens	NCN
A. salicina	Willow acacia
A. verticillata	Star acacia
Adenostoma sparsifolium	Red shanks
Aesculus californica	California buckeye
Agonis flexuosa	Peppermint tree
Ailanthus altissima	Tree-of-heaven
Albizia julibrissin	Silk tree
Alnus cordata	Italian alder
Arbutus menziesii	Madrone
A. unedo	Strawberry tree
Arctostaphylos manzanita	Common manzanita
Brachychiton acerifolius	Flame tree
B. populneus	Bottle tree
Broussonetia papyrifera	Paper mulberry

No common name

Latin name	Common name
TREES - <i>Cont'd.</i>	
Callistemon citrinus	Lemon bottlebrush
C. rigidus	Stiff bottlebrush
C. viminalis	Weeping bottlebrush
Calocendrus decurrens	Incense cedar
Castanopsis chrysophylla	Giant chinquapin
Castanae mollissima	Chinese chestnut
Casuarina cunninghamiana	River she-oak
C. equisetifolia	Horsetail tree
C. stricta	Beefwood
Catalpa speciosa	Western catalpa
Ceanothus arborsus	Feltleaf ceanothus
Ceanothus 'Ray Hartman'	Ray Hartman ceanothus
Cedrus atlantica	Atlas cedar
C. deodora	Deodar cedar
C. libani	Cedar-of-Lebanon
Celtis australis	European hackberry
C. laevigata	Mississippi hackberry
C. occidentalis	Common hackberry
C. sinensis	Chinese hackberry
Ceratonia siliqua	Carob
Ceridium floridum	Blue palo verde
Cercidium spp.	Palo verde
Cercis canadensis	Eastern redbud
C. occidentalis	Western redbud
Cercocarpus betuloides	Mountain mahogany
C. ledifolius	Curl-leaf mahogany
Cinnamomum camphora	Camphor
Comarostaphylis diversifolia	Summer holly
Cotinas coggygia	Smoke tree
Crataegus spp.	Hawthorn
Cupressocyparis leylandi	Leyland cypress
Cupressus spp.	Cypress
C. arizonica bonita	Smooth Arizona cypress
C. macrocarpa	Monterey cypress
Dalea spinosa	Smoke tree
Elaeagnus angustifolia	Russian olive
Eriobotrya deflexa	Bronze loquat
E. japonica	Japanese loquat

Latin name**Common name****TREES - *Cont'd.***

Escallonia bifida	White escallonia
Eucalyptus calophylla	Eucalyptus
E. camaldulensis	Red gum
E. citriodora	Lemon scented gum
E. cladocalyx	Sugar gum
E. eremophila	Tall sand mallee
E. erythrocorys	Red cap gum
E. ficifolia	Red flowered gum
E. globulus 'Compacta'	Dwarf blue gum
E. gunnii	Cider gum
E. lehmannii	Bushy yate
E. leucoxydon	White ironbark
E. leucoxydon rosea	Pink flowered white ironbark
E. maculata	Spotted eucalyptus
E. microtheca	Eucalyptus
E. nicholii	Peppermint gum
E. niphophila	Snow gum
E. polyanthemos	Silver dollar gum
E. pulverulenta	Silver mountain gum
E. rudis	Desert gum
E. sideroxydon rosea	Red ironbark
E. torquata	Coral gum
E. viminalis	Manna gum
Feijoa sellowiana	Pineapple guava
Ficus carica	Common fig
Fraxinus dipetela	Foothill ash
F. holotrichia 'Moraine'	Moraine ash
F. oxycarpa 'Raywood'	Raywood ash
F. uhdei	Evergreen ash
F. velutina	Arizona ash
F. velutina 'Modesto'	Modesto ash
Fremontodendron spp.	Flannel bush
Geijera parviflora	Australian Willon
Ginkgo biloba	Maidenhair tree
Gleditsia triacanthos inermis	Thornless honey locust
Grivillea robusta	Silk oak
Hakea laurina	Sea urchin

Latin name

Common name

TREES - *Cont'd.*

Heteromeles arbutifolia	Toyon
Hoheria populnea	New zealand lace bark
Juglans spp.	Walnut
J. hindsii	California black walnut
Juniperus californica	California juniper
J. occidentalis 'Glauc'	Sierra juniper
J. scopulorum 'Pendula'	Weeping Rocky Mtn. juniper
J. virginiana	Red cedar juniper
Koelreuteria bipinnata	Chinese flame tree
K. paniculata	Goldenrain tree
Lagerstroemia indica	Crape myrtle
Laurus nobilis	Grecian laurel
Lavatera assurgentiflora	Tree mallow
Leptospermum laevigatum	Australian tea tree
Ligustrum lucidum	Glossy privet
Liriodendron tulipifera	Tulip tree
Lithocarpus densiflorus	Tanbark oak
Lyonothamnus floribundus	Catalina ironwood
Maclura pomifera	Osage orange
Maytenus boaria	Mayten tree
Melaleuca armillaris	Drooping melaleuca
M. elliptica	Melaleuca
M. linariifolia	Flaxleaf paperbark
M. nesophila	Pink melaleuca
M. quinquenervia	Cajeput tree
M. styphelioides	Prickly melaleuca
Melia azedarach 'Umbraculifera'	Texas umbrella tree
Metrosideros excelsus	New Zealand christmas tree
Morus alba 'Stribling'	Fruitless white mulberry
M. rubra	Red mulberry
Myoporum laetum	Myoporum
Nerium oleander	Oleander
Olea europea	European olive
Parkisonia aculeata	Jerusalem thorn
Phellodendron amurense	Amur cork tree
Photinia serrulata	Chinese photinia

Latin name**Common name****TREES - *Cont'd.***

Pinus aristata	Bristlecone pine
P. attenuata	Knobcone pine
P. canariensis	Canary Island pine
P. coulteri	Coulter pine
P. eldarica	Eldarica pine
P. halepensis	Aleppo pine
P. jeffreyi	Jeffrey pine
P. muricata	Bishop pine
P. pinaster	Maritime pine
P. pinea	Italian stone pine
P. ponderosa	Ponderosa pine
P. radiata	Monterey pine
P. sabiniana	Digger pine
P. sylvestris	Scotch pine
P. thunbergiana	Japanese black pine
P. torreyana	Torrey pine
Pistacia atlantica	Mount Atlas pistache
P. chinensis	Chinese pistache
P. vera	Pistachio nut
Pittosporum spp.	Pittosporum
P. crassifolium	NCN
P. phillyraeoides	Willow pittosporum
P. rhombifolium	Queensland pittosporum
P. undulatum	Victorian box
P. viridiflorum	Cape pittosporum
Platanus acerifolia	London plane tree
P. racemosa	California sycamore
Podocarpus gracilior	African fern pine
Populus alba	White poplar
P. fremotii	Fremont cottonwood
P. f. 'Nevada'	Nevada male cottonwood
Prunus spp.	Prunus
P. cerasifera atropurpurea	Pissard plum
P. ilicifolia	Hollyleaf cherry
P. lusitanica	Portugal laurel
P. lyonii	Catalina cherry
Psidium littorale	Strawberry guava
Pseudotsuga menziesii	Douglas fir

Latin name

Common name

TREES - *Cont'd.*

Punica granatum
 Pyrus calleryana
 Quercus agrifolia
 Q. chrysolepsis
 Q. douglasii
 Q. dumosa
 Q. engelmannii
 Q. garryana
 Q. ilex
 Q. kelloggii
 Q. lobata
 Q. suber
 Q. wislizenii

Pomegranate
 Flowering pear
 Coast live oak
 Canyon live oak
 Blue oak
 Scrub oak
 Mesa oak
 Oregon white oak
 Holly oak
 California black oak
 Valley oak
 Cork oak
 Interior live oak

Rhamnus alaternus
 Rhus integrifolia
 R. lancea
 R. ovata
 Robinia ambigua 'Idahoensis'
 R. pseudoacacia

Italian buckthorn
 Lemonade berry
 African sumac
 Sugar bush
 Idaho locust
 Black locust

Sambucus spp.
 Sambucus caerulea
 Schinus molle
 C. polygamus
 S. terebinthifolius
 Sequoia sempervirens
 Tamarix aphylla
 Tristania conferta
 T. laurina

Elderberry
 Blue elderberry
 California pepper tree
 Peruvian pepper tree
 Brazilian pepper tree
 Coast redwood
 Athel tree
 Brisbane box
 Swamp myrtle

SHRUBS

Abelia grandiflora
 Acacia baileyana
 A. b. 'Purpurea'
 A. cultriformis

Glossy abelia
 Bailey acacia
 Purple leaf acacia
 Knife acacia

Latin name**Common name****SHRUBS - Cont'd.**

A. cyclopis	NCN
A. decurrens	Green wattle
A. d. dealbata	Silver wattle
A. farnesiana	Sweet acacia
A. greggii	Catlaw acacia
A. longifolia	Sydney golden wattle
A. pendula	Weeping acacia
A. podalyriifolia	Pearl acacia
A. pycnantha	Golden wattle
A. redolens	NCN
A. saligna	Willow acacia
A. verticillata	Star acacia
Achillea spp.	Yarrow
Adenostoma sparsifolium	Red shanks
Aesculus californica	California buckeye
Agapanthus africanus	Lily-of-the-Nile
A. 'Dwarf White	Dwarf white agapanthus
A. orientalis	Lily-of-the-Nile
A. 'Peter Pan'	Dwarf blue agapanthus
Agonis flexuosa	Peppermint tree
Aloe spp.	Aloe
Alyogyne huegelii	Blue hibiscus
Arbutus unedo	Strawberry tree
A. u. 'Compacta'	Dwarf strawberry tree
Arctostaphylos bakeri	Louis Edmunds manzanita
'Louis Edmunds'	
A. densiflora	Vine Hill manzanita
A. d. 'Harmony'	Harmony manzanita
A. d. 'Howard McMinn'	Howard McMinn manzanita
A. d. 'James West'	James West manzanita
A. d. 'Sentinel'	Sentinel manzanita
A. edmundsii	Little Sur manzanita
A. e. 'Carmel Sur'	Carmel Sur manzanita
A. e. 'Danville'	Danville manzanita
A. e. 'Little Sur'	Little Sur manzanita
A. franciscana	NCN
A. glandulosa	Eastwood manzanita
A. glauca	Bigberry manzanita

Latin name

Common name

SHRUBS - *Cont'd.*

A. 'Greensphere'	Greensphere manzanita
A. hookeri	Monterey manzanita
A. manzanita	Common manzanita
A. pumila	Sandmat manzanita
A. stanfordiana	Stanford manzanita
Argemone spp.	Prickly poppy
Artemisia californica	California sagebrush
A. caucasica	Silver spreader
A. tridentata	Big Basin sagebrush
Atriplex spp.	Saltbrush
A. canescens	Four-winged saltbrush
A. glauca	NCN
A. lentiformis	Quail brush
A. l. breweri	Brewer lenscale
A. nummularia	Coyote brush
Baccharis spp.	
B. pilularis	Prostrate coyote brush
B. pilularis consanguinea	Coyote brush
B. viminea	Mulefat
Berberis darwinii	Darwin's barberry
B. mentorensis	Mentor barberry
B. thunbergii	Japanese barberry
Bougainvillea spp.	Bougainvillea
Buxus microphylla japonica	Japanese boxwood
Caesalpinia gilliesii	Bird-of-paradise bush
Calceolaria integrifolia	Perennial pouch flower
Calliandra californica	NCN
C. eriophylla	False mesquite
C. tweedii	Trinidad flame bush
Callistemon spp.	Bottlebrush
C. citrinus	Lemon bottlebrush
C. pallidus	NCN
C. phoeniceus	Fiery bottlebrush
C. rigidus	Stiff bottlebrush
C. viminalis	Weeping bottlebrush
Cassia spp.	Senna
C. artemisioides	Feathery cassia
C. wislizeni	Shrubby senna
Ceanothus arboreus	Feltleaf ceanothus

Latin name**Common name****SHRUBS - *Cont'd.***

C. 'Blue Cushion'	Blue Cushion ceanothus
C. crassifolius	Hoary-leaf ceanothus
C. 'Concha'	Concha ceanothus
C. cyaneus	San Diego ceanothus
C. 'Frosty Blue'	Frosty Blue ceanothus
C. gloriosus exaltus 'Emily Brown'	Emily Brown ceanothus
C. griseus	Carmel ceanothus
C. griseus horizontalis 'Santa Ana'	Santa Ana ceanothus
C. griseus 'Louis Edmunds'	Louis Edmunds ceanothus
C. impressus	Santa Barbara ceanothus
C. 'Joyce Coulter'	Joyce Coulter ceanothus
C. 'Julia Phelps'	Julia Phelps ceanothus
C. 'Mountain Haze'	Mountain Haze ceanothus
C. 'Ray Hartman'	Ray Hartman ceanothus
C. 'Sierra Blue'	Sierra Blue ceanothus
C. purpureus	Hollyleaf ceanothus
C. rigidus 'Snowball'	Snowball ceanothus
C. thyrsoflorus 'Snow Flurry'	Snow Flurry ceanothus
Cercidium spp.	Palo verde
Cercis occidentalis	Western redbud
Cercocarpus spp.	Mountain mahogany
C. ledifolius	Curl-leaf mountain mahogany
Chamelaucium uncinatum	Geraldton waxflower
Chaenomeles spp.	Flowering quince
Cistus spp.	Rockrose
C. corbariensis	White rockrose
C. ladanifer	Crimson-spot rockrose
C. purpureus	Orchid-spot rockrose
Comarostaphylis diversifolia	Summer holly
Convolvulus cneorum	Bush morning glory
Correa 'Ivory Bells'	Hybrid Australian fuchsia
Cotinus coggygria	Smoke tree
C. c. 'Purpureus'	Purple smoke tree
Cotoneaster buxifolious	Bright bead cotoneaster
C. congestus	NCN
C. conspicuus decora	Neclace cotoneaster
C. lactea	Red clusterberry

Latin name

Common name

SHRUBS - Cont'd.

<i>Cytisus praecox</i>	Moonlight broom
<i>Dalea spinosa</i>	Smoke tree
<i>Dendromecon harfordii</i>	Island bush poppy
<i>D. rigida</i>	Bush poppy
<i>Dodonaea viscosa</i>	Hop bush
<i>D. v. 'Purpurea'</i>	Purple-leaf hop bush
<i>Echium fastuosum</i>	Pride-of-Madeira
<i>Elaeagnus pungens</i>	Silverberry
<i>Encelia californica</i>	California encelia
<i>E. farinosa</i>	Desert encelia
<i>Eriobotrya deflexa</i>	Bronze loquat
<i>E. japonica</i>	Loquat
<i>Eriogonum arborescens</i>	Santa Cruz Buckwheat
<i>E. cinerium</i>	Ashyleaf buckwheat
<i>E. crocatum</i>	Saffron buckwheat
<i>E. giganteum</i>	St. Catherine's lace
<i>E. grande rubescens</i>	Red buckwheat
<i>E. parvifolium</i>	Seacliff buckwheat
<i>E. umbellatum polyanthum</i>	Sulphur buckwheat
<i>Eriophyllum confertiflorum</i>	Golden yarrow
<i>E. staechadifolium</i>	Lizard tail
<i>Escallonia bifida</i>	White escallonia
<i>E. exoniensis</i>	NCN
<i>Escallonia 'Fradesi'</i>	NCN
<i>Eucalyptus erythrocorys</i>	Red cap gum
<i>E. lehmannii</i>	Bushy yate
<i>E. macrocarpa</i>	Desert malee
<i>E. niphophila</i>	Snow gum
<i>E. rhodantha</i>	African daisy
<i>Euryops pectinatus</i>	Pineapple-guava
<i>Feijoa sellowiana</i>	Flannel bush
<i>Fremontodendron spp.</i>	
<i>Genista lydia</i>	NCN
<i>Garrya spp.</i>	Silktassel
<i>G. elliptica</i>	Coast silktassel
<i>Grevillea 'Aromas'</i>	NCN
<i>G. banksii</i>	Crimson coneflower
<i>G. 'Canberra'</i>	Canberra grevillea
<i>G. lanigera</i>	Wooly grevillea

Latin name**Common name****SHRUBS - *Cont'd.***

G. 'Noellii'

Noelli grevillea

G. rosmarinifolia

Rosemary grevillea

G. thelemanniana

Hummingbird bush, Hakea
laurina, and Sea Urchin

H. suaveolens

Sweet hakea

Heteromeles arbutifolia

Toyon

Hypericum beanii

NCN

Isomeris arborea

Bladderpod

Jasminum humile

Italian jasmine

Juniperus spp.

Juniper

J. chinensis 'Mint Julep'

Mint Julep juniper

J. c. 'Pfitzerana'

Pfitzer juniper

J. c. 'Pfitzerana Aurea'

Golden Pfitzer juniper

J. c. 'Pfitzerana Blue-Gold'

Golden Pfitzer juniper

J. c. 'Torulosa'

Hollywood juniper

Lantana camara

Bush lantana

Laurus nobilis

Grecian laurel

Lavandula spp.

Lavender

L. augustifolia

English lavender

L. dentata

French lavender

Lavatera assurgentiflora

Tree mallow

Leonotus leonurus

Lions tail

Leptodactylon californicum

Prickly phylox

Leptospermum laevigatum

Australian tea tree

L. scoparium

New Zealand tea tree

Leucophyllum frutescens

Texas Ranger

'Compactum'

Ligustrum japonicum

Japanese privet

Ligustrum ovalifolium

California privet

Lithocarpus densiflorus

Tanbark oak

Lyonothamnus floribundus

Catalina ironwood

Limonium perezii

Sea lavender

Lotus scoparius

Deerweed

Lupinus albifrons

Silver lupine

L. arboreus

Tree lupine

L. chamissonis

Dune lupine

Latin name	Common name
SHRUBS - <i>Cont'd.</i>	
Mahonia amplexans	NCN
M. aquifolium	Oregon grape
M. bealei	Leatherleaf mahonia
M. 'Golden Abundance'	NCN
M. higginsae	NCN
M. nevini	Nevin mahonia
M. pinnata	California holly grape
M. repens	Creeping mahonia
Melaleuca armillaris	Drooping melaleuca
M. elliptica	NCN
M. nesophila	Pink melaleuca
Metrosideros excelsus	New Zealand christmas tree
Mimulus spp.	Monkey flower
Myoporum laetum	Myoporum
Myrica californica	Pacific wax myrtle
Myrsine africana	African boxwood
Myrtus communis	Myrtle
M. c. 'Compacta'	Compact myrtle
Nandina domestica	Heavenly bamboo
Nerium oleander	Oleander
Ochna serrulata	Mickey Mouse plant
Osmanthus fragrans	Sweet olive
Osteospermum spp.	Trailing South African daisy
Pennisetum setaceum	Fountain grass
Penstemon antirrhinoides	Yellow penstemon
Penstemon centranthifolius	Scarlet bugler
P. heterophyllus	Blue penstemon
P. spectabilis	Showy penstemon
photinia fraseri	Photinia
P. serrulata	Chinese photinia
Phormium tenax	New Zealand flax
Phyllostachys aurea	Golden bamboo
Pinus mugo mughus	Dwarf Mugo pine
Pistacia vera	Pistachio nut
Pittosporum crassifolium	NCN
P. eugenoides	Tarata

Latin name**Common name****SHRUBS - Cont'd.**

<i>P. tenuifolium</i>	Tawhiwhi
<i>P. phillyraeoides</i>	Willow pittosporum
<i>P. rhombifolium</i>	Queensland pittosporum
<i>P. tobira</i>	Tobira
<i>P. t. 'Wheeleri'</i>	Wheeler's dwarf tobira
<i>P. undulatum</i>	Victorian box
<i>P. viridiflorum</i>	Cape pittosporum
<i>Plumbago auriculata</i>	Cape plumbago
<i>Podocarpus macrophylla</i>	Yew pine
<i>Prunus</i> spp.	NCN
<i>P. caroliniana</i>	Carolina laurel cherry
<i>P. ilicifolia</i>	Holly-leaf cherry
<i>P. lusitanica</i>	Portugal laurel
<i>P. lyonii</i>	Catalina cherry
<i>Psidium guajava</i>	Guava
<i>P. littorale</i>	Strawberry guava
<i>Punica granatum 'Nana'</i>	Dwarf pomegranate
<i>P. granatum 'Wonderful'</i>	Pomegranate
<i>Pyracantha</i> spp.	Firethorn
<i>Quercus dumosa</i>	Scrub oak
<i>Raphiolepis indica</i>	Indian hawthorn
<i>R. umbellata</i>	Yeddo hawthorn
<i>Rhamnus alaternus</i>	Italian buckhorn
<i>R. californica</i>	Coffeeberry
<i>R. crocea</i>	Redberry
<i>Rhus integrifolia</i>	Lemonade berry
<i>R. laurina</i>	Laurel sumac
<i>R. ovata</i>	Sugar bush
<i>Ribes aureum</i>	Golden currant
<i>R. sanguineum</i>	Red flowering gooseberry
<i>R. sanguineum 'Glutinosum'</i>	NCN
<i>R. speciosum</i>	Fuchsia-flowered gooseberry
<i>R. viburnifolium</i>	Evergreen currant
<i>Romneya coulteri</i>	Matilija poppy
<i>Rosmarinus officinalis</i>	Rosemary
<i>R. o. 'Prostratus'</i>	Dwarf rosemary

Latin name

Common name

SHRUBS - *Cont'd.*

Salvia apiana	White sage
Salvia clevelandii	Cleveland sage
S. leucantha	Mexican bush sage
S. leucophylla	Purple sage
S. mellifera	Black sage
Sambucus spp.	Elderberry
S. caerulea	Blue elderberry
Santolina spp.	NCN
Sarcococa ruscifolia	Fragrant sarcococa
Simmondsia chinensis	Jobba
Sollya heterophylla	Australian bluebell creeper
Syzygium paniculatum	Australian bush cherry
Tecomaria capensis	Cape honeysuckle
Teucrium fruticans	Bush germander
Viburnum japonicum	Japanese viburnum
V. odoratissimum	Sweet viburnum
V. suspensum	Sandankwa viburnum
V. tinus	Laurustinus
Viguiera spp.	NCN
Westringia rosmariniformis	Westringia
Xylosma congestum	Shiny xylosma

GROUNDCOVERS

Acadia rodolens	NCN
Achillea spp.	Yarrow
Agapanthus 'Dwarf White'	Dwarf White agapanthus
A. 'Peter Pan'	Dwarf blue agapanthus
Arctostaphylos densiflora	Vine Hill manzanita
A. d. 'James West'	James West manzanita
A. edmundsii	Little Sur manzanita
A. e. 'Carmel Sur'	Carmel Sur manzanita
A. e. 'Danville'	Danville manzanita
A. e. 'Little Sur'	Little Sur manzanita
A. 'Emerald Carpet'	Emerald Carpet manzanita

Latin name**Common name****GROUNDCOVER - *Cont'd.***

A. hookeri	Monterey manzanita
A. h. 'Monterey Carpet'	Monterey Carpet manzanita
A. h. 'Wayside'	Wayside manzanita
A. uva-ursi	Bearberry
A. u. 'Point Reyes'	Point Reyes bearberry
A. u. 'Radiant'	Radiant bearberry
A. 'Indian Hill'	Indian Hill manzanita
A. 'Sea Spray'	Sea Spray manzanita
A. 'Winterglow'	Winterglow manzanita
Arctotheca calendula	Capeweed
Artemisia caucasica	Silver spreader
A. pycnocephala	Coast sagebrush
Atriplex glauca	NCN
A. semibaccata	Creeping Australian saltbrush
Baccharis pilularis 'Twin Peaks'	Twin Peaks coyote bush
B. p. 'Pigeon Point'	Pigeon Point coyote brush
Ceanothus gloriosus	Point Reyes ceanothus
C. g. exaltatus 'Emily Brown'	Emily Brown ceanothus
C. g. porrectus	Mount Vision ceanothus
C. griseus horizontalis	Carmel creeper
C. g. h. 'Yankee Point'	Yankee Point ceanothus
C. hearstiorum	Hearst ceanothus
Ceanothus 'Joyce Coulter'	Joyce Coulter ceanothus
Ceanothus maritimus	Maritime ceanothus
Ceanothus rigidus 'Snowball'	Snowball ceanothus
Centaurea cineraria	Dusty miller
Cistus crispus	Rockrose
C. salvifolius	Sageleaf rockrose
C. skanbergii	Hybrid rockrose
Convolvulus mauritanicus	Ground morningglory
Coprosma kirkii	Creeping coprosma
C. pumila 'Verde Vista'	Verde Vista coprosma
Correa 'Carmine Bells'	Australian fuchsia
Cotoneaster buxifolius	Bright bead cotoneaster
C. congestus 'Likiang'	NCN
C. horizontalis	Rock cotoneaster
C. 'Lowfast'	Lowfast cotoneaster
C. microphyllus	Rockspray cotoneaster

Latin name

Common name

GROUND COVER - *Cont'd.*

Eriogonum crocatum	Saffron buckwheat
E. fasciculatum	Common buckwheat
Gazania spp.	Gazania
Grevillea lanigera	Wooly grevillea
Helianthemum nummularium	Sunrose
Hypericum calycinum	St. Johnswort
Juniperus spp.	Juniper
J. chinensis 'Parsoni'	Prostrate juniper
J. conferta	Shore juniper
J. procumbens	Japanese garden juniper
J. virginiana 'Silver Spreader'	Silver Spreader juniper
Lantana montevidensis	Trailing lantana
Lippia canescens	Lippia
Lithodora diffusa 'Grace Ward'	Grace Ward lithodora
Lobularia maritima	Sweet asylum
Lonicera japonica 'Halliana'	Hall's honeysuckle
Lupinus nanus	Annual lupine
Mahonia repens	Creeping mahonia
Myoporum debile	NCN
M. parvifolium	Creeping mahonia
Osteospermum spp.	Trailing South African daisy
Pyracantha spp.	Firethorn
Ribes viburnifolium	Evergreen currant
Rosmarinus officinalis	Rosemary
R. o. 'Prostrata'	Prostrate rosemary
R. o. 'Collingwood Ingram'	Collingwood Ingram rosemary
Salvia sonomensis	Creeping sage
Santolina chamaecyparissus	Lavender cotton
S. virens	NCN
Trifolium frageriferum 'O'Connors'	O'Connors legume
Zauschneria californica	California fuchsia

VINES

Bougainvillea spp.	Bougainvillea
Campis radicans	Trumpet creeper
Clytostoma callistegioides	Lavender trumpet vine

Latin name**Common name****VINES - *Cont'd.***

Disticus buccinatotia
 Celsemion sempervirens
 Hibbertia scandens
 Jasminum polyanthum
 Lonicera hilebrandiana
 L. sempervirens
 Macfadyena unguis-cati
 Parthenocissus tricuspidata
 P. quinquefolia
 Passiflora caerulea
 Polygonum aubertii

Blood red trumpet vine
 Carolina jessamine
 Guinea gold vine
 Pink jasmine
 Burmese honeysuckle
 Trumpet honeysuckle
 Yellow trumpet vine
 Boston Ivy
 Virginia creeper
 Passion vine
 Silver lace vine

Rosa banksiae
 Rosa 'Cecile Brunner'
 Solanum jasminoides
 Tecomaria capensis
 Vitis vinifera
 Wisteria spp.

Lady banks rose
 Cecile Brunner rose
 Potato vine
 Cape honeysuckle
 Grape
 Wisteria

PALMS

Chamaerops humilis
 Cordyline australis
 Phoenix canariensis
 Trachycarpus fortunei
 Washingtonia filifera
 W. robusta
 Yucca gloriosa
 Y. filamentosa

Mediterranean fan palm
 Dracaen
 Canary Island date palm
 Windmill palm
 California fan palm
 Mexican fan palm
 Spanish dagger
 Adams needle

PERENNIALS

Achillea filipendulina
 A. millefolium
 A. tomentosa
 Alcea rosea
 Amaryllis belladonna

Fernleaf yarrow
 Common yarrow
 Woolly yarrow
 Hollyhock
 Naked lady

Latin name**Common name****PERENNIALS - Cont'd.**

Arctotis spp.	African Daisy
Armeria maritima	Sea pink
Artemisia pycnocephala	Coast sagebrush
A. schmidtiana 'Silver Mound'	Silver Mound'
Aspidistra elatior	Cast iron plant
Aurinia saxatilis	Perennial alyssum
Calendula officinalis	Calendula
Centaurea cineraria	Dusty miller
Centaurea cyanus	Cornflower
Centranthus ruber	Jupiter's beard
Ceratostigma plumbagoides	Dwarf plumbago
Cheiranthus cheiri	Wallflower
Chrysanthemum frutescens	Marguerite
Coreopsis spp.	NCN
Cosmos bipinnatus 'Dazzler'	Dazzler cosmos
C. b. 'Radiance'	Radiant cosmos
C. sulphureus	Yellow cosmos
Diplacus spp.	Monkey flower
Dietes vegeta	Butterfly iris
Erigeron karvinskianus	Fleabane, Mexican Daisy
Erysimum hieraciifolium	Siberian wallflower
Eschscholzia californica	California poppy
Festuca ovina glauca	Blue fescue
Gaillardia grandiflora	Blanket flower
Gazania rigens leucolaena	Trailing gazania
Geranium incanum	Crane's bill
Helichrysum petiolatum	Perennial strawflower
Hemerocallis spp.	Daylilies
Hypericum calycinum	St. Johnswort
Iris douglasiana	Douglas iris
Kniphofia uvaria	Red hot poker
Lantana montevidensis	Trailing lantana
Limonium perezii	Sea lavender
Lobularia maritima	Sweet alyssum
Mirabilis jalapa	Four o'clock
Jyosotis sylvatica	Forget-me-not

Latin name**Common name****PERENNIALS - Cont'd.**

Narcissus spp.	Daffodil
Neiremburgia hippomanica violacea	Dwarf cup flower
Oenothera berlandieri	Mexican evening primrose
Pelargonium hortorum	Common geranium
P. peltatum	Ivy geranium
Pennisetum setaceum	Fountain grass
Penstemon heterophyllus purdyi	Blue bedder
Phlox subulata	Dwarf phlox
Phyla nodiflora	Lippia
Romneya coulteri	Matilija poppy
Rudbeckia hirta	Gloriosa daisy
Salvia clevelandii	Cleveland sage
S. leucantha	Mexican sage
Santolina chamaecyparissus	Gray lavender cotton
S. virens	Green lavender cotton
Scaevola 'Mauve Clusters'	Fan flower
Sedum spathulifolium	NCN
Senecio cineraria	Dusty miller
Stachys byzantia	Lambs ears
Teucrium chamaedrys	Germander
Teucrium fruticans	Bush germander
Thymus praecox articus	Mother-of-thyme
Thymus vulgaris	Common thyme
Trichostema lanatum	Wooly blue curls
Tropaeolum majus	Garden nasturtium
Verbena tenuisecta	NCN
Zauschneria californica	California fuchsia

Appendix C

Summary of *A Landscape Guide to Native and Naturalized Plants for Santa Clara County*, published by the Santa Clara Valley Water District.

Latin name	Common name
TREES	
Aesculus Californica	California buckeye
Arbutus Menziesii	Pacific madrone
Castanopsis Chrysophylla	Giant chinquapin
Cornus Nuttallii	Mountain dogwood
Cupressus Macnabiana	McNab cypress
Fraxinus Dipetala	Flowering ash
F. Latifolia	Oregon ash
F. Velutina	Arizona ash
Lithocarpus Densiflora	Tanbark oak
Pinus Attenuata	Knobcone pine
P. Ponderosa	Ponderosa pine or yellow pine
P. Sabiniana	Digger pine
Platinus Racemosa	Western Sycamore
Populus Fremontii	Fremont Cottonwood
Quercus Agrifolia	Coast live oak
Q. Crysolepis	Canyon live oak or gold cup oak
Q. Douglasii	Blue oak
Q. Garryana	Oregon oak
Q. Kelloggii	California black oak
Q. Lobata	Valley oak or white oak
Q. Wislizenii	Interior live oak
Sambucus Mexicana	Blueberry elder
SHRUBS	
Adenostoma Fasciculatum	Chamise or greasewood
Arctostaphylos Glauca	Bigberry manzanita
A. Manzanita	Parry manzanita

Latin name**Common name****SHRUBS - Cont'd.**

Artemisia Douglasiana

Sagebrush wormwood

Atriplex Lentiformis

Brewer's saltbrush

Baccharis Pilularis spp.

Consanguinea Chaparral Broom
or Coyote brush

Baccharis viminea

Mule fat

Berberis Pinnata

California holly grape

Ceanothus Papillosus

Wartleaf ceanothus

C. Thyrsiflorus

Blue blossom

Cercocarpus Betuloides

Mountain mahogany

Dendromecon rigida

Tree poppy

Eriogonum Arborescens

Santa cruz island buckwheat

E. Fasciculatum

California buckwheat

E. Giganteum

Saint Catherine's lace

Fremontia

Fremontia and flannel bush
variety & California glory

Garrya Fremontii

Fremont silk-tassel bush

Heteromeles Arbutifolia

Toyon, Christmas berry

Juniperus Californica

California juniper

Lupinus Albifrons var. Collinus

Lupine

Osmaronia Cerasiformis

Oso berry

Pickeringia Montana

Chaparral pea

Prunus Illicifolia

Holly-leaved cherry or
islay

Quercus Dumosa

Scrub oak

Q. Durata

Leather oak

Rhamnus Californica

California coffeeberry

R. Crocea ssp. Illicifolia

Holly-leaf redberry

Rhus Diversiloba

Poison oak

R. Ovata

Sugar bush

Ribes Speciosum

Fuchsia-flowered gooseberry

Romneya coulteri

Matilija poppy

Rosa Californica

California wild rose

R. Gymnocarpa

Wood rose

Salvia Leucophylla

Purple sage

S. Mellifera

Black sage

Vitis Californica

California wild grape

Latin name

Common name

HERBS AND GRASSES

Amsinckia Douglasiana
Avena Fatua
Bromus Mollis
Clarkia Unguiculata
Cynoglossum Grande
Eschscholzia Californica
Gilia Achilleaefolia
G. Capitata spp. Tomentosa

Fiddleneck
Wild oat
Soft chess
Mountain garland
Hound's tongue
California poppy
Yarrow Gilia
Blue thimble flower

Linaria Canadense var. Texana
Linum Perenne
Lolium Multiflorum
Lupinus Nanus ssp. Latifolius
Marah Fabaceus
Mentzelia Lindleyi
(Bartonia Aurea)

Toad flax
Perennial blue flax
Italian Rye Grass
Sky lupine
Wild cucumber, big root
Blazing star

GROUND COVER

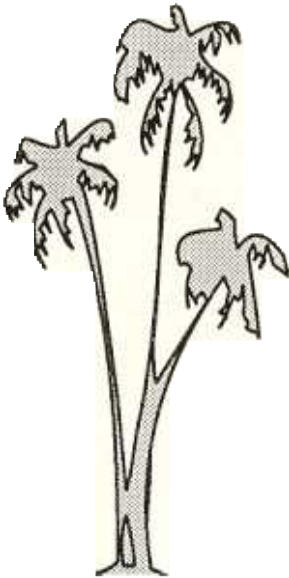
Arctostaphylos Densiflora
A. Edmundsii
A. Hookeri
A. Uva-ursi
Ceanothus Gloriosus
C. Griseus var. Horizontalis
Clematis Lasiantha

Sonoma manzanita and vine hill
manzanita
Little sur manzanita
Monterey manzanita
Bearberry, sandberry, and
kinnikinnick
Point reyes ceanothus
Carmel creeper
Virgin's bower or clematis

Eriogonum Baileyi ssp. Elegans
E. Vimineum ssp.
Lippia Nodiflora var. Rosea
Salvia Sonomensis
S. Spathacea
Zauchneria California ssp.

Wild buckwheat
Wild buckwheat
Garden lippia
Sonoma sage
Pitcher sage
California fuchsia of
hummingbird flower

*Landscape
and
Irrigation
Guidelines*



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Appendix D

ORDINANCE NO. 24600

AN ORDINANCE OF THE CITY OF SAN JOSE AMENDING CHAPTER 15.10 OF THE SAN JOSE MUNICIPAL CODE, AND ADDING A NEW CHAPTER 15.11, TO ADD DEFINITIONS; TO REQUIRE THE USE OF RECLAIMED WATER FOR CERTAIN IRRIGATION; TO PROHIBIT CERTAIN ACTIVITIES DURING WATER SHORTAGE CONDITIONS; TO MODIFY PROCEDURES WITH REGARD TO WATER WASTE PREVENTION AND WATER SHORTAGES; AND TO MAKE OTHER TECHNICAL AMENDMENTS

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF SAN JOSE:

SECTION 1. Chapter 15.10 of Title 15 of the San Jose Municipal Code is hereby amended to be numbered, entitled and to read as follows:

Part 1 GENERAL PROVISIONS

15.10.010 Purpose.

The City of San Jose is dedicated to long-term water conservation to address the chronic water shortage, to protect the aquifers of the City, and to prevent land surface subsidence. Moreover, the City is subject to periodic droughts, a circumstance which requires the City Council to take steps to protect the health, safety and general welfare of the public.

15.10.020 Definitions.

The definitions set forth in this Part shall govern the application and interpretation of this Chapter.

15.10.030 Potable Water.

- A. "Potable water" means water of a quality which meets California Department of Health Services and San Francisco Bay Regional Water Quality Control Board requirements for water suitable for human consumption.

- B "Potable water" does not include bottled drinking water; reclaimed water; recycled or so-called "gray water"; water brought into the County of Santa Clara by truck; water from dewatering operations; Water Pollution Control Plant effluent; or water pumped for remediation purposes pursuant to a permit from the Santa Clara Valley Water District or the San Francisco Bay Regional Water Quality Control Board.

15.10.040 Gray Water.

"Gray water" means water which is collected and recycled or reused after its original use.

15.10.050 Reclaimed Water.

"Reclaimed water" means water which, as a result of treatment of domestic wastewater, or groundwater cleanup discharge, is suitable for direct beneficial use or a controlled use that would not otherwise occur.

15.10.060 Water From Dewatering Operations.

"Water from dewatering operations" means water which is extracted from the ground or a sump to prevent the flooding of a building, structure, or excavation

15.10.070 Syringing.

"Syringing", means the watering of golf course greens, golf course tees, lawn bowling greens, or tennis greens, for a period not too exceed ten minutes per hour.

15.10.080 Landscape Irrigation Audit.

"Landscape irrigation audit" means a process to perform site inspections, evaluate irrigation systems, and develop efficient irrigation schedules.

15.10.090 Automatic Positive Self-Closing Valve.

"Automatic positive self-closing valve" is a valve that requires a person using a hose to apply and maintain pressure at the outlet end of the hose to activate the flow of water.

15.10.095 Director.

Except as otherwise explicitly stated, "Director" means the Director of the Environmental Services Department.

Part 2
WATER WASTE PREVENTION

15.10.200 Water Waste Prevention

- A. The regulations in this Part are intended to be permanent water conservation measures and to apply to the use of water from all sources on an on-going basis.
- B. No person shall waste water from any source nor shall any person allow such water wastage.
- C. No person shall use any water from any source, or continue the use of any water from any source, in any way prohibited by this Chapter.

15.10.210 Repair Of Plumbing, Sprinkler And Irrigation Systems.

- A. No owner or manager or other person responsible for the day-to-day operation of any premises shall fail to initiate repair of any leaking, broken or defective water pipes, faucets, plumbing fixtures, other water service appliances, sprinklers, watering or irrigation systems, within five (5) working days after the owner, manager or other responsible person knew or should have known of such leaks, breaks or defects.
- B. No owner or manager or other person responsible for the day-to-day operation of any premises shall fail to complete repair of any leaking, broken or defective water pipes, faucets, plumbing fixtures, other water service appliances, sprinklers, watering or irrigation systems, as soon as practical after initiation of such repair.

15.10.220 Water Run-Off Prohibited.

- A. No person shall use any water in any manner which results in run-off onto sidewalks, driveways, gutters or streets, except for water used in accordance with Sections 15.10.240 or 15.10.250.
- B. No person shall use any water in any manner which results in run-off beyond the immediate area of use, or the pooling or puddling of water, except for water used in accordance with Sections 15.10.240 or 15.10.250.

15.10.230 Restaurants, Banquet Facilities, Hotels And Dining Facilities.

No person shall provide any water to any customer at any restaurant, banquet facility, hotel or commercial dining facility, unless and until the customer requests water.

15.10.240 Cleaning Of Structures And Surfaces.

No person shall use water through a hose to clean the exterior of any building or any structure or to clean sidewalks, driveways, patios, decks, tennis courts, parking lots or any other exterior paved or hard-surfaced areas, unless such hose is equipped with an automatic positive self-closing valve.

15.10.250 Washing Of Vehicles.

No person shall use any water through a hose to wash any car, truck, boat, trailer, bus, recreational vehicle, camper, or any other vehicle, or any portion thereof, unless such hose is equipped with an automatic positive self-closing valve.

15.10.255 Commercial Car Washes.

No owner, manager or employee of a commercial car wash facility shall use any water to wash, or allow or permit the use of any water to wash, any car, truck, boat, trailer, bus, recreation vehicle, camper or any other vehicle, or any portion thereof, except if such person can demonstrate that such washing is exclusively by one of the following methods:

- A. Use of mechanical automatic car wash facilities utilizing water recycling equipment.
- B. Use of a bucket and hand washing

- C Use of a hose equipped with an automatic positive self-closing valve

15.10.260 Building And Construction.

No person shall use, permit or allow the use of potable water for building or construction purposes, such as consolidation of backfill or dust control, without a prior approved written exception from the City.

15.10.270 Hydrants.

No person, except a water company for the purpose of necessary hydrant or water distribution system maintenance, or under the direction of the City's Fire Chief for firefighting or fire sprinkler maintenance, shall use, permit or allow the use of any water or flushing of any water from any fire hydrant, without a approved prior approved written exception from the City.

15.10.290 Landscape Irrigation.

- A No person shall use, permit or allow the use of potable water to irrigate any outdoor landscaping at any time between the hours of 8:00 a.m. and 6:00 p.m. during Pacific Daylight Savings Time, or between the hours of 10:00 a.m. and 3:00 p.m. during Pacific Standard Time, unless the person using or allowing the use of the water is using a bucket, hand-carried container, or a hose equipped with an automatic positive self-closing valve.
- B The restrictions on landscape irrigation contained in this Section do not apply to the following activities:
- ¹ Syringing of golf course greens, golf course tees, lawn bowling greens or lawn tennis courts;
 2. The conduct of a landscape water management audit to provide for the evaluation and adjustment of a landscape irrigation system.

15.10.295 Use of Reclaimed Water.

No person shall use, permit or allow the use of potable water to irrigate any outdoor landscaping, where an irrigation system has been installed to allow for use of reclaimed water and reclaimed water is available to the property for irrigation use.

**Part 3
WATER SHORTAGE MEASURES**

15.10.300 Water Shortage Measures.

- A The City Council may, by resolution, declare a state of water shortage whenever it finds that water supplies are expected to be inadequate to meet at least ninety percent (90%) of projected water demand, or whenever a minimum conservation level of ten percent (10%) or more has been established by the Santa Clara Valley Water District.
- B In adopting such a resolution, the City Council may declare whether the water shortage is a ten percent (10%) shortage; a twenty percent (20%) shortage; a thirty percent (30%) shortage; or a forty percent (40%) shortage. In the event that a water shortage resolution adopted by the City Council fails to declare the level of water shortage, the resolution shall be deemed to be a resolution of a ten percent (10%) water shortage.
- C In addition to the requirements of Part 2 of this Chapter, the provisions of this Part 3 shall apply to all uses of water for such period of time as a water shortage resolution adopted by the Council remains in effect.

15.10.310 Landscape Irrigation Restrictions.

- A After adoption by the City Council of a resolution declaring a ten percent (10%) or greater water shortage, it shall be unlawful for any person to use or allow the use of potable water to irrigate any outdoor landscaping at any time between the hours of 8:00 a.m. and 6:00 p.m. during Pacific Daylight Saving Time, or between the hours of 10:00 a.m. and 3:00 p.m. during Pacific Standard Time, except for the purpose of syringing of golf course greens, golf course tees, lawn bowling greens or lawn tennis courts.
- B After adoption by the City Council of a resolution declaring a thirty percent (30%) or greater water shortage, it shall be unlawful for any person to use

or allow the use of potable water to irrigate any landscaping, except for the purpose of syringing golf course greens, or golf course tees, lawn bowling greens or lawn tennis courts.

- C The restrictions on landscape irrigation contained in sub-sections A and B above do not apply to the use of water for the purpose of conducting of a landscape water management audit to provide for the evaluation and adjustment of a landscape irrigation system.

15.10.320 Restaurants.

Upon adoption by the City Council of a resolution declaring a twenty percent (20%) or greater water shortage, the owner and manager of every restaurant, banquet facility or dining facility shall display "NOTICE OF WATER SHORTAGE" information in conspicuous places upon such premises, including every restroom. The information shall be conveyed by placard, menu message, decal or other form approved or provided by the Director.

15.10.325 Hotels, Motels And Other Lodgings.

Upon adoption by the City Council of a resolution declaring a twenty percent (20%) or greater water shortage, the owner and manager of every hotel, motel, inn, guest house, bed and breakfast facility, and every other short-term commercial lodging shall post "NOTICE OF WATER SHORTAGE" information in every guest room, in a form approved or provided by the Director.

15.10.330 Public Restrooms.

Upon adoption by the City Council of a resolution declaring a twenty percent (20%) or greater water shortage, the owner and manager of every facility with a restroom on the premises open to the public shall post in every such public restroom, a placard or decal with "NOTICE OF WATER SHORTAGE" information in a form approved or provided by the Director.

15.10.340 Cleaning Of Structures And Surfaces.

After adoption by the City Council of a resolution declaring a twenty percent (20%) or greater water shortage, it shall be unlawful for any person to:

- A Use potable water except by the use of a bucket, to clean sidewalks, driveways, patios, decks, tennis courts, parking lots or any other exterior

paved or hard-surfaced areas, without a prior approved written exception from the Director;

B Use potable water, except by the use of a bucket, to clean the exterior of any building or structure, except as surface preparation for the application of any architectural coating, or in connection with waxing, without a prior approved written exception from the Director. For purposes of this Section, "structures" includes mobile homes and manufactured homes.

15.10.350 Operation Of Decorative Fountains.

After the adoption by the City Council of a resolution declaring a twenty percent (20%) or greater water shortage, it shall be unlawful for any person to operate any decorative fountain with potable water unless such decorative fountain is recirculating, non-misting and fully lined.

15.10.360 New Landscape Installation.

After adoption by the City Council of a resolution declaring a thirty percent (30%) or greater water shortage, it shall be unlawful for any person to install new outdoor landscaping, or plantings, during the months of May through October.

15.10.365 Hydrants.

After adoption by the City Council of a resolution declaring a thirty percent (30%) or greater water shortage, it shall be unlawful for any person, except a water company for the purpose of necessary hydrant or water distribution system maintenance, or under the direction of the City's Fire Chief for firefighting or fire sprinkler maintenance, to use or allow the use of any water or flushing of any water from any fire hydrant.

15.10.370 Prohibition on Landscape Irrigation.

After adoption by the City Council of a resolution declaring a forty percent (40%) or greater water shortage, it shall be unlawful for any person to use or allow the use of potable water to irrigate any outdoor landscaping.

15.10.375 Filling Pools, Spas And Fountains.

After adoption by the City Council of a resolution declaring a forty percent (40%) or greater water shortage, it shall be unlawful for any person to fill any swimming pool, fountain or spa.

15.10.380 Exception Requests.

- A. Any person seeking an exception to the use of potable water under any provision off this Chapter shall file a written request for exception on a form provided by the City, documenting the reasons why there is no other alternative to the use of potable water for the specified purpose, and why no other source of water, such as reclaimed water or water from dewatering operations, can be used.
- B. Any request for exception filed under this Section shall be accompanied by an Exception Review fee. The amount of the Exception Review fee shall be as set forth in the Schedule of Fees established by resolution of the City Council.
- C. No request for an exception shall be accepted for review until the fee has been paid.
- D. Requests for exceptions shall be filed with the Director of Environmental Services, except that Requests under Section 15.10.260 shall be filed with the Director Of Public Works.
- E. No exception shall be granted unless the Director of the Department with which it is required to be filed, determines that there is no other alternative to potable water reasonably available for the specified purpose, and that no other source of water, such as reclaimed water or water from dewatering operations, can reasonably be used.
- F. The Directors of Environmental Services and Public Works are authorized to promulgate joint guidelines for determining when other alternative sources of water will be considered reasonably available.

15.10.390 Fee For Placards.

Whenever the Director provides placards or decals to businesses for use in compliance with this Chapter, the Director shall first collect from such businesses a fee as set forth in the Schedule of Fees adopted by resolution of the City Council.

Part 4
WATER MANAGEMENT

15.10.400 Landscape Irrigation Audit Required.

The owner of any property that is subject to the requirements of Chapter 15.11 of this Code, and any owner of property having a landscaped area (as defined in Section 15.11.126) of one acre or more, including golf courses, green belts, common areas, multi-family housing, schools, businesses, parks, cemeteries, parks, and publicly owned landscapes, shall cause a landscape irrigation audit of the property to be performed at least every five years.

15.10.410 Certificate In Lieu of Landscape Irrigation Audit.

- A. If a landscaped area is using no more than 22.5 gallons of water per year per square foot, in lieu of an audit, the owner of the property may file a certificate, under penalty of perjury, stating that the area is using no more than 22.5 gallons of water per square foot per year.
- B. The certificate shall be supported by a calculation of the average annual water usage for the area, based on water bills, covering at least one (1) year, and no more than five(5) years, immediately preceding the date on which a landscape irrigation audit would otherwise be due.

15.10.420 Format and Filing of Audits and Certificates.

Landscape irrigation audits and certificates shall be filed with the Director. The form of the audit and certificate and the information and data to be provided thereby shall be as prescribed by the Director.

15.10.430 Due Date for Audits and Certificates.

- A. For landscaped areas in existence on January 1, 1993, landscape irrigation audits shall be due on June 1, 1998, and every five (5) years thereafter.
- B. For landscaped areas installed after January 1, 1993, audits shall be due sixty six months (66) after installation of the landscaped area, and every five (5) years thereafter.

SECTION 2. Title 15 of the San Jose Municipal Code is hereby amended by adding a Chapter to be numbered and entitled and to read as follows:

Chapter 15.11

**WATER EFFICIENT LANDSCAPE STANDARDS
FOR NEW AND REHABILITATED LANDSCAPING**

**Part 1
General Provisions**

15.11.100 General.

The definitions set forth in this Part shall govern the application and interpretation of this Chapter.

15.11.102 Anti-drain valve or check valve.

"Anti-drain valve" or "check valve" means a valve located under a sprinkler head to hold water in the system so it minimizes drainage from the lower elevation sprinkler heads.

15.11.104 Application rate.

"Application rate" means the depth of water applied to a given area, usually measured in inches per hour.

15.11.106 Applied water.

"Applied water" means the water supplied to the landscaped area by the irrigation system.

15.11.108 Automatic controller.

"Automatic controller" means a mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application

15.11.110 Backflow prevention device.

"Backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply by the reverse flow of water from the irrigation system.

15.11.112 Ecological restoration project.

"Ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

15.11.114 Emitter.

"Emitter" means drip irrigation fittings that deliver water slowly from the system to the soil.

15.11.116 Established landscape.

"Established landscape" means the point at which plants in the landscape have developed roots into the soil adjacent to the root ball.

15.11.118 Establishment period.

"Establishment period" means the first year after installing plant(s) in the landscape.

15.11.120 Hydrozone.

"Hydrozone" means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated. For example, a naturalized area planted with native vegetation that will not need supplemental

irrigation once established is a non-irrigated hydrozone. An irrigated hydrozone is a hydrozone served by a valve or set of valves with the same irrigation schedule.

15.11.122 Infiltration rate

"Infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (for example inches per hour).

15.11.124 Irrigation efficiency.

"Irrigation efficiency" means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices.

15.11.126 Landscaped area.

"Landscaped area" means the entire parcel less the building footprint, non-landscaped future development areas, driveways, non-irrigated portions of parking lots, hardscapes (such as decks and patios, and other non-porous areas). Water features (such as ponds, watercourses and decorative fountains) are included in the calculation of the landscaped area. Areas without permanent irrigation such as natural areas to remain in a native state shall be excluded from the calculation of landscaped area.

15.11.128 Mulch.

"Mulch" means any material such as leaves, bark, straw or other materials left loose and applied to the soil surface to reduce evaporation.

15.11.130 Operating pressure.

"Operating pressure" means the pressure at which a system of sprinklers is designed to operate, usually indicated at the base of a sprinkler.

15.11.132 Overhead sprinkler irrigation.

"Overhead sprinkler irrigation" means any irrigation system or device which delivers water by spraying or misting.

15.11.134 Overspray.

"Overspray" means the water which is delivered beyond the landscaped area wetting pavements, walks, structures, or other non-landscaped areas.

15.11.134 Rehabilitated landscape.

"Rehabilitated landscape" means any relandscaping project that requires a development permit pursuant to Title 20 of this Code.

15.11.136 Run off.

"Run off" means water which is not absorbed by the soil or landscape to which it is applied and flows from the area. For example, run off may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a severe slope.

15.11.138 Soil type.

"Soil type" means the classification of soil based on the percentage of sand, silt, and clay in the soil.

15.11.140 Sprinkler head.

"Sprinkler head" means a device which sprays water through a nozzle.

15.11.142 Turf.

"Turf" means a surface layer of earth containing mowed grass with its roots

15.11.144 Valve.

"Valve" means a device used to control the flow of water in the irrigation system.

Part 2

Landscape Installation Requirements

15.11.200 Applicability of Requirements for New or Rehabilitated Landscaping.

- A Except as provided in subsection B of this Section, the requirements of this Chapter shall apply to:
 - 1 All new and rehabilitated landscaping for projects that, require a development permit pursuant to Title 20 of this Code; and
 - 2 Developer-installed landscaping in single-family projects.
- B The requirements of this Chapter shall not apply to:
 - 1 Homeowner-provided landscaping at single-family residences;
 - 2 Ecological restoration projects that do not require a permanent irrigation system;
 - 3 Cemeteries.

15.11.205 Landscape Documentation Package.

- A A Landscape Documentation Package conforming to this Chapter shall be submitted to the Director of Planning with any application for a development permit. The Landscape Documentation Package shall be considered as part of the development permit application.
- B Each Landscape Documentation Package shall include the following elements, which are described in further detail in Sections 15.11.210 through 15.11.270:
 - 1 Water Conservation Concept Statement
 - 2 Calculation of the Maximum Applied Water Allowance
 - 3 Calculation of the Estimated Applied Water Use
 - 4 Calculation of the Estimated Total Water Use

- 5 Landscape Design Plan
- 6 Irrigation Design Plan
- 7 Irrigation Schedules
- 8 Maintenance Schedule

15.11.210 Water Conservation Concept Statement.

The form of the Water Conservation Concept Statement and the information and data required to be set forth therein shall be as prescribed by the Director of Planning.

15.11.215 Maximum Applied Water Allowance.

- A. "Maximum Applied Water Allowance" (MAWA) means, for design purposes, the upper limit of annual applied water for the established landscape.
- B. A project's MAWA shall be 22.5 gallons of water per year per square foot of landscaped area.
- C. Portions of landscaped areas in public and private projects such as parks, playgrounds, sports fields, golf courses, or school yards where turf provides a playing surface or serves other recreational purposes may require water in addition to the MAWA. When the estimated water use exceeds the MAWA, the use of turf shall be limited to those areas devoted to active play areas and water conserving plantings shall be used on the perimeters of the site. A statement shall be included with the landscape design plan, designating areas to be used for such purposes and specifying any needed amount of additional water above the MAWA.
- D. The MAWA for a project that will use reclaimed water may be adjusted based on site specific requirements demonstrating the need for, and availability of, reclaimed water in excess of the MAWA.

15.11.220 Estimated Applied Water Use.

- A. "Estimated Applied Water Use" means the portion of the Estimated Total Water Use that is derived from applied water.
- B. A project's Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance, plus such additional amount as may be approved for playing surfaces or other recreation purposes pursuant to Section 15.11.460 C or for a project using reclaimed water pursuant to Section 15.11.460 D.
- C. A calculation of the Estimated Applied Water Use shall be submitted with the Landscape Documentation Package. It may be calculated by totaling the amount of water recommended in the Irrigation Schedule.

20.11.225 Estimated Total Water Use.

- A. "Estimated Total Water Use" means the annual total amount of water estimated to be needed to keep the plants in the landscaped area healthy. The Estimated Total Water Use for the entire landscaped area equals the sum of the Estimated Total Water Use of all hydrozones in that landscaped area.
- B. A calculation of the Estimated Total Water Use shall be submitted with the Landscape Documentation Package. The Estimated Total Water Use may be calculated by totaling the amount of water recommended in the Irrigation Schedule or may be calculated using the following formula:

$$EWU (\text{hydrozone}) = [45.3 \times 0.5 \times (HA) \times (.62)] / .625$$

$$EWU (\text{hydrozone}) = \text{Estimated Water Use (gallons per year)}$$

$$HA = \text{hydrozone area (square feet)}$$

(.62) = conversion factor used to convert acres per square foot per year to gallons per square foot per year.

15.11.230 Landscape Design Plan.

A landscape design plan shall be submitted as part of the landscape documentation package. The form of the landscape design plan and the information and data required to be set forth thereon shall be as prescribed by the Director of Planning.

15.11.235 Landscape Design - Plant Selection and Grouping.

- A. New landscaping shall use water conserving plant materials that are native to, or are adapted to a hot dry summer/cool wet winter climate. Non-native/adapted varieties that require large amounts of irrigation water to survive the hot dry summer season shall not be used except when the plant is located within a micro-climate area of the project that maintains plant health and appearance with minimal irrigation water.
- B. The plant species listed in the City of San Jose Landscape and Irrigation Guidelines, as revised from time to time, shall be used unless other water conserving plants are specifically permitted by the Director of Planning.
- C. The project site shall be classified into hydrozones. Planting materials shall then be chosen and grouped according to these zones, except where dissimilar planting zones overlap each other where and the respective planting zones have similar watering requirements, or where planting zones of differing watering requirements can be efficiently irrigated together.
- D. Plants shall be selected appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the site. Protection and preservation of native species and natural areas is encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this Chapter.
- E. All plant materials used in the landscape shall be chosen to ensure that the Estimated Applied Water Use recommended does not exceed the MAWA.

15.11.240 Landscape Design - Water features.

- A. Recirculating or reclaimed water shall be used for decorative water features, such as ponds, pools, streams and fountains.
- B. Decorative water features shall be constructed with an impermeable liner.
- C. Decorative water features that include sprays, fogs, or mists are prohibited.

15.11.245 Irrigation Design Plan.

An irrigation design plan shall be submitted as part of the landscape documentation package. The irrigation design plan shall be consistent with the hydrozones for the landscaped areas in the project. The form of the irrigation design plan and the information and data required to be set forth thereon shall be as prescribed by the Director of Planning.

15.11.250 Irrigation Design Criteria.

- A. Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to avoid runoff, low head drainage, overspray, and other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures. Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates therefore minimizing runoff.
- B. No overhead sprinkler irrigation systems shall be installed in median strips less than ten feet wide.
- C. Irrigation systems shall be designed, maintained, and managed to meet or exceed 0.625 efficiency.

15.11.255 Irrigation Equipment.

- A. Landscape irrigation systems for all projects, except single family homes or projects with a landscaped area of less than Five Thousand (5,000) square feet, shall include a separate landscape water meter.

- B. Backflow prevention device(s) and automatic control systems shall be installed in all irrigation systems and must be able to accommodate all aspects of the design.
- C. Cross-connections between the metered landscaped water supply and any other metered water supply is prohibited.
- D. Plants which require different amounts of water shall be irrigated by separate valves. If one valve is used for a given area, only plants with similar water use shall be used in that area.
- E. Anti-drain (check) valves shall be installed at strategic points to minimize or prevent low-head drainage.
- F. Sprinkler heads and emitters shall have consistent application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance.
- G. Rain sensing override devices shall be installed in all irrigation systems.

15.11.260 Landscape Irrigation Systems.

- A. Irrigation systems, shall be designed and installed to allow for the current and future use of reclaimed water for all landscaped areas in excess of Ten Thousand (10,000) square feet, except as provided in subsection B, below.
- B. Reclaimed water irrigation systems shall not be required where the Director of Planning grants an exemption on the basis that reclaimed water is not available, and will not be available in the foreseeable future, to serve the project.
- C. Plant materials selected for landscaped areas to be irrigated with reclaimed water shall be tolerant of salinity build up in the soil.

- D All irrigation systems shall be metered separately from the domestic water supply system, shall have no on-site cross connections to the domestic water supply system, and shall meet all other legal requirements necessary to allow conversion of the irrigation system from potable to reclaimed water supply as soon as reclaimed water is available, except as provided in subsection B, above.

15.11.265 Irrigation Schedules.

- A An irrigation schedule shall be submitted as part of each Landscape Documentation Package. The form of the irrigation schedule and the information and data required to be set forth therein shall be as prescribed by the Director of Planning.
- B The irrigation schedule shall include an annual irrigation program, with seasonal irrigation schedules, for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.
- C The irrigation schedule shall
 - 1 Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station; and
 - 2. Specify the amount of applied water (in hundred cubic feet, gallons, or in whatever billing units the local water supplier uses) recommended on a monthly and annual basis.
- D The irrigation schedule shall use evapotranspiration data to apply the appropriate levels of water during the different water demand seasons.
- E The landscape irrigation schedule shall be consistent with the requirements of Section 15.10.310 of this Code.

15.11.270 Maintenance Schedules.

- A A regular maintenance schedule shall be submitted as part of the Landscape Documentation Package. The form of the maintenance schedule and the information and data required to be submitted therein shall be as prescribed by the Director of Planning.

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4/25/94

- B. Landscapes shall be maintained to ensure water efficiency. A regular maintenance schedule shall include but not be limited to checking, adjusting, and repairing irrigation equipment; resetting the automatic controller; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning, and weeding in all landscaped areas.
- C. Repair of irrigation equipment and landscape maintenance shall not cause any variation from the approved landscape design plan.

15.11.275 Certification.

- A. Upon completion of the installation of the irrigation system, an irrigation audit shall be conducted by a certified landscape irrigation auditor prior to the installation of plant materials to ensure a minimum irrigation efficiency of sixty two (62.5%) percent.
- B. Certificate(s) of substantial completion shall be provided to the Department of Planning, upon completion of the irrigation system and installation of all plant material. The certificate(s) shall be provided by the owner, a landscape architect, licensed landscape contractor, certified irrigation designer, or other licensed or certified professional in a related field, and shall be based on field observation(s). The certificate(s) shall specifically indicate that (1) the irrigation system was installed as designed, (2) plants were installed as specified, and (3) an irrigation audit has been performed, along with a list of any observed deficiencies, and corrective actions taken.
- C. The form of the audit and certificates and the information and data to be supplied thereby shall be as prescribed by the Director of Planning.

15.11.280 Model Homes.

- A. All model home landscaping shall be designed and installed in conformance with this Chapter and shall demonstrate via information provided to prospective purchaser the principles of water efficient landscapes described in this Chapter.
- B. Signs shall be used to identify the model as an example of a water efficient landscape and featuring elements such as hydrozones, irrigation equipment and others which contribute to the overall water efficient theme. Any outdoor signs shall conform to the requirements of Title 23 of this Code.

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- C. Information shall be provided to prospective purchasers about designing, installing, and maintaining water efficient landscapes.

PASSED FOR PUBLICATION OF TITLE this 26th day of April

1994, by the following vote:

AYES: ALVARADO, BEALL, FERNANDES, FISCALINI, JOHNSON
JOHNSON, PANDORI, POWERS, SHIRAKAWA; HAMMER

NOES: NONE

ABSENT: HEAD

VACANT: DISTRICT 8



SUSAN HAMMER, Mayor

ATTEST:



PATRICIA L. O'HEARN, City Clerk